

# **APPENDIX III**

## **TAB B**

Brian Alters 6/2/2005

SHEET 1 PAGE 1

00001  
1 IN THE UNITED STATES DISTRICT COURT  
2 FOR THE MIDDLE DISTRICT OF PENNSYLVANIA  
3  
4  
5  
6 TAMMY KITZMILLER,  
7 ET AL.,  
8 Plaintiffs,  
9 V Case No. 04-CV-2688  
10 DOVER AREA SCHOOL  
11 DISTRICT and DOVER  
12 AREA SCHOOL DISTRICT  
13 BOARD OF DIRECTORS,  
14 Defendants.  
15  
16 Oral deposition of BRIAN  
17 ALTERS, Ph.D., taken at the law  
18 offices of Pepper Hamilton, LLP, 3000  
19 Two Logan Square, 18th & Arch  
20 Streets, Philadelphia, Pennsylvania,  
21 on June 2, 2005, at 9:01 a.m., before  
22 Jennifer L. Bernadez, a Registered  
23 Professional Reporter, and Notary  
24 Public, pursuant to notice.

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00003  
1 BRIAN ALTERS, Ph.D., having  
2 been duly sworn, was examined and  
3 testified as follows:  
4 EXAMINATION  
5 BY MR. WHITE:  
6 Q. Please state your name.  
7 A. Brian Alters.  
8 Q. My name is Ed White. I'll  
9 be taking your deposition today.  
10 Can you explain your  
11 familiarity with the events involved  
12 in this lawsuit?  
13 A. I understand that the Dover  
14 School Board instituted a policy that  
15 requires -- that did require teachers  
16 to read a four-paragraph statement; I  
17 understand that the teachers did not  
18 want to do that, wrote a letter to  
19 the superintendent; the assistant  
20 superintendent then went and read the  
21 four-paragraph statement to the  
22 students; that the policy also  
23 involved a change in the curriculum,  
24 specifically the evolution unit; that

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00002  
1 APPEARANCES:  
2 PEPPER HAMILTON LLP  
3 BRIAN J. ROTHSCHILD, ESQUIRE  
4 ROTHSCHILD@PEPPERLAW.COM  
5 3000 Two Logan Square  
6 18th & Arch Streets  
7 Philadelphia, Pennsylvania 19103  
8 215-981-4000  
9 and  
10 AMERICAN CIVIL LIBERTIES UNION  
11 OF PENNSYLVANIA  
12 WITOLD WALCZAK, ESQUIRE  
13 wwalczak@aclupgh.org  
14 313 Atwood Street  
15 Pittsburgh, Pennsylvania 15213  
16 412-691-7736  
17 Attorneys for Plaintiffs  
18  
19 THOMAS MORE LAW CENTER  
20 EDWARD L. WHITE, III, ESQUIRE  
21 www.thomasmore.org  
22 24 Frank Lloyd Wright Drive  
23 P.O. Box 393  
24 Ann Arbor, Michigan 48106  
734-827-2001  
Attorney for Defendant  
EXHIBIT INDEX  
MARKED  
ALTERS  
1 EXPERT WITNESS REPORT 51  
2 BIOLOGY CURRICULUM PRESS 75  
3 RELEASE  
4 CURRICULUM VITAE 146  
5 PHOTOCOPY OF PAGES OF THE 227  
BOOK "BIOLOGY"  
6 APPENDIX B ACADEMIC 234  
7 STANDARDS FOR SCIENCE AND  
8 TECHNOLOGY AND  
9 ENVIRONMENT AND ECOLOGY

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00004  
1 the book Pandas And People -- "Of  
2 Pandas And People" was put as a  
3 resource for the change in the  
4 curriculum, I read a press release  
5 concerning it from the school.  
6 That's generally it. I  
7 probably know some more details, but  
8 I can't think of them at the moment.  
9 Q. I didn't hear when you  
10 said, someone wrote a letter to the  
11 superintendent?  
12 A. I saw a letter to Nielsen.  
13 I believe the name was, by six or  
14 seven teachers, I believe they were,  
15 stating their objections to the  
16 policy.  
17 Q. And what was the change in  
18 the curriculum?  
19 A. I don't have it memorized,  
20 but essentially it was to make  
21 students aware of gaps, problems,  
22 intelligent design. I don't have it  
23 in front of me, so I haven't  
24 memorized it.

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SHEET 2 PAGE 5

00005

1 Q. Where was "Of Pandas And  
2 People" placed?  
3 A. Where was it placed?  
4 Q. Where was it placed?  
5 A. I understand that 60 copies  
6 were donated to the Dover School  
7 District, and I don't know their  
8 final placement.  
9 Q. Now, before your deposition  
10 you had an opportunity to speak with  
11 your attorney here today?  
12 A. Yes, sir.  
13 Q. And you understand what a  
14 deposition is all about?  
15 A. I believe so.  
16 Q. Do you have any questions  
17 you want answered right now about a  
18 deposition?  
19 A. Do we get a good lunch?  
20 Q. That's up to your attorney.  
21 Now, although there is no  
22 judge in here today, it is a formal  
23 legal proceeding. It is the same as  
24 testifying in court.

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00007

1 rephrase it so you do understand it  
2 so I can get your accurate answer.  
3 Okay?  
4 A. Okay.  
5 Q. We'll be taking breaks  
6 periodically during the day. If you  
7 need a break beforehand, just let me  
8 know and we will just finish the line  
9 of questioning and then we will take  
10 a break. All right?  
11 Now, during the deposition  
12 if you remember any information that  
13 applies to an earlier answer, just  
14 let me know and then you can state  
15 that new information on the record.  
16 Okay?  
17 A. Okay.  
18 Q. Are you on any medication  
19 or drugs at this time?  
20 A. No.  
21 Q. Have you had any alcoholic  
22 beverages in the past eight hours to  
23 drink?  
24 A. No.

PAGE 6

00006

1 Do you understand what an  
2 oath is?  
3 A. Yes.  
4 Q. Do you understand that you  
5 need to tell the truth?  
6 A. Yes.  
7 Q. Have you ever been deposed  
8 before?  
9 A. No.  
10 Q. I'll be asking you  
11 questions. Your answers will be  
12 recorded by the court reporter, and  
13 she can only record your verbal  
14 responses. She can't record nods of  
15 your head, shakes of your head,  
16 huh-uh, nah-nah, anything like that,  
17 so yes, no, and other audible words.  
18 Okay?  
19 A. I'll try to remember that.  
20 Q. If not, I'll remind you.  
21 A. Thank you.  
22 Q. Now, if you don't  
23 understand a question that I ask,  
24 please let me know and I will try to

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00008

1 Q. Are you currently under a  
2 doctor's care?  
3 A. No.  
4 Q. Is there any reason why you  
5 won't be able to answer my questions  
6 truthfully today?  
7 A. No.  
8 Q. Do you have any problem  
9 with your hearing?  
10 A. No.  
11 Q. Your eyesight?  
12 A. No.  
13 Q. Have you gone by any other  
14 names besides Brian Alters?  
15 A. No.  
16 Q. What is your current  
17 occupation?  
18 A. University professor.  
19 Q. Where?  
20 A. McGill University.  
21 Q. Where is that?  
22 A. Montreal.  
23 Q. Canada?  
24 A. Yes.

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SHEET 3 PAGE 9

00009

1 Q. Explain what you do as  
2 university professor at McGill.  
3 A. That would take a long  
4 time. I'll try to --  
5 Q. Give me a brief summary.  
6 A. I teach teachers how to  
7 teach science. I teach graduate  
8 students, master's and doctoral level  
9 students, science education. I  
10 perform service for the university  
11 giving talks, helping museums and so  
12 forth, and I do a certain amount of  
13 scholarship writing.  
14 Q. When you teach teachers to  
15 teach science, is there any  
16 difference in how you have to teach a  
17 teacher to teach science in Canada  
18 than in the United States?  
19 A. I have also taught teachers  
20 how to teach science in the United  
21 States.  
22 Q. Okay. But your current  
23 teaching in Canada, how does that  
24 differ for teachers who have to teach

PAGE 11

1 00011

2 1 first semester I taught one course.  
3 2 Q. What was that course?  
4 3 A. It was elementary science  
5 4 methods, approximately 200 students.  
6 5 Q. What was your sabbatical?  
7 6 What did you do during your  
8 7 sabbatical?  
9 8 A. Basically I collected  
10 9 materials to author another book.  
11 10 Q. What is this book going to  
12 11 be about?  
13 12 A. It's probably going to be  
14 13 about how the general public comes to  
15 14 understand creation, evolution, the  
16 15 difference between science and  
17 16 religion and its impact on education.  
18 17 Q. When you say "probably,"  
19 18 what do you mean "probably"?  
20 19 A. I don't have a working  
21 20 title yet. I have a rough outline.  
22 21 I'm still collecting materials that  
23 22 may morph into something other than  
24 23 that description I just gave.  
25 24 Q. Tell me more about what the

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1 00010

2 1 in Canada compared to the United  
3 2 States?  
4 3 A. In general it doesn't.  
5 4 Q. What level teachers are  
6 5 these? Are they going to be teaching  
7 6 in grade school, high school,  
8 7 college, what?  
9 8 A. I've taught elementary and  
10 9 secondary, and some of my graduate  
11 10 students are university people.  
12 11 Q. Where did you teach  
13 12 teachers to teach in the United  
14 13 States?  
15 14 A. Harvard.  
16 15 Q. How many classes currently  
17 16 are you teaching where you are  
18 17 teaching teachers how to teach  
19 18 science?  
20 19 A. What do you mean by  
21 20 "currently"?  
22 21 Q. This past year. This  
23 22 current year.  
24 23 A. I've had a -- been on  
25 24 sabbatical this semester, so the

PAGE 12

1 00012

2 1 book is going to be about. How does  
3 2 it all fit together? What's your  
4 3 thesis, your arguments?  
5 4 A. I don't have that yet.  
6 5 It's too premature.  
7 6 Q. Have you any previous  
8 7 writings upon which you are building  
9 8 for this book?  
10 9 A. "Defending Evolution In The  
11 10 Classroom" might be relevant.  
12 11 "Teaching Evolution In Higher  
13 12 Education" might be relevant.  
14 13 "Teaching Biology In Higher  
15 14 Education" might be relevant.  
16 15 Q. Now, is this new book going  
17 16 to be geared to the high school level  
18 17 or the college level?  
19 18 A. Tentatively right now  
20 19 neither. It will probably be geared  
21 20 towards the general public.  
22 21 Q. How far are you in the  
23 22 process of writing this book?  
24 23 A. I don't even have a draft  
25 24 chapter.

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SHEET 4 PAGE 13

1 00013  
 2 1 Q. Is it more just an idea?  
 3 2 A. Collecting materials and  
 4 3 trying to formulate ideas, at this  
 5 4 point.  
 6 5 Q. What are the areas of  
 7 6 expertise that you bring to this case  
 8 7 on behalf of the plaintiffs?  
 9 8 A. Well, I have expertise in  
 10 9 science education, and I have some  
 11 10 knowledge of students' religious  
 12 11 objections to evolution.  
 13 12 Q. Do you have expertise in  
 14 13 this latter category?  
 15 14 A. Some expertise.  
 16 15 Q. When you say "some  
 17 16 expertise," what does that mean?  
 18 17 A. I don't know how to  
 19 18 quantify it.  
 20 19 Q. Have you written on that  
 21 20 subject?  
 22 21 A. Yes.  
 23 22 Q. What types of articles have  
 24 23 you written?  
 25 24 A. Probably the summation of

PAGE 14

1 00014  
 2 1 the work would be the "Defending  
 3 2 Evolution In The Classroom" book.  
 4 3 Q. What is that book about?  
 5 4 Why does evolution need to be  
 6 5 defended in the classroom, and  
 7 6 defended from what?  
 8 7 MR. WALCZAK: That's a  
 9 8 compound question. It can be taken  
 10 9 one at a time.  
 11 10 BY MR. WHITE:  
 12 11 Q. Why does it need to be  
 13 12 defended?  
 14 13 A. Evolution is under attack  
 15 14 at various levels. It is somewhat of  
 16 15 an example that we are here today,  
 17 16 that it's under attack. Teachers  
 18 17 feel intimidated, teachers feel  
 19 18 pressured not to teach evolution.  
 20 19 Teachers rarely feel that in science,  
 21 20 physics, chemistry and biology and  
 22 21 any other area.  
 23 22 Q. Why do they feel this  
 24 23 pressure?  
 25 24 A. They feel pressure that --

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1 00015  
 2 1 some people feel that evolution, the  
 3 2 teaching evolution, counters their  
 4 3 religious beliefs.  
 5 4 Q. So how does that pressure a  
 6 5 teacher?  
 7 6 A. Teachers -- most teachers  
 8 7 didn't go into teaching -- at least  
 9 8 the ones I have spoken to, thousands  
 10 9 over the years -- didn't go into  
 11 10 teaching to have a fight with parents  
 12 11 or administrators. They teach  
 13 12 evolution, a parent complains to the  
 14 13 principal, the principal then talks  
 15 14 to the teacher and says, "How can we  
 16 15 make this go away."  
 17 16 Or other students start  
 18 17 arguing with the teacher concerning  
 19 18 their religious beliefs, and teachers  
 20 19 not wanting to have battles over this  
 21 20 sometimes feel that maybe it is just  
 22 21 better to deemphasize the teaching  
 23 22 evolution, not teach it at all, or  
 24 23 just teach it anyway but feel the  
 25 24 pressure to do otherwise.

PAGE 16

1 00016  
 2 1 Q. Do you have any quantified  
 3 2 studies about this pressure that  
 4 3 teachers feel?  
 5 4 A. The National Science  
 6 5 Teachers Association did a study  
 7 6 within this last year of their  
 8 7 membership, and approximately  
 9 8 one-third of teachers said they felt  
 10 9 pressure in some way to deemphasize  
 11 10 or not to teach evolution.  
 12 11 Q. How many members does this  
 13 12 association have?  
 14 13 A. Over 50,000.  
 15 14 Q. Is it a national or an  
 16 15 international organization?  
 17 16 A. Primarily national, but it  
 18 17 does have international members.  
 19 18 Q. National in the United  
 20 19 States?  
 21 20 A. Correct.  
 22 21 Q. How many teachers are there  
 23 22 in the United States?  
 24 23 A. I don't know.  
 25 24 Q. More than 50,000?

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SHEET 5 PAGE 17

1 00017

2 1 A. Yes.

3 2 Q. So not every teacher in the

4 3 United States is a member of this

5 4 organization?

6 5 A. Correct. It is the largest

7 6 science teachers association in the

8 7 world.

9 8 Q. Now, you are defending

10 9 evolution from what?

11 10 A. Those that would rather not

12 11 see it taught.

13 12 Q. Who are "those"?

14 13 A. Well, that's a large group,

15 14 and it's a very varied group, but

16 15 generally they come under the term

17 16 "creationists."

18 17 Q. Now, do creationists want

19 18 evolution not taught in the school?

20 19 A. Some do.

21 20 Q. What do they want taught in

22 21 the school?

23 22 A. Some don't say. Some say

24 23 they don't want it taught. Some say

25 24 we would like to see supernatural

PAGE 19

1 00019

2 1 years, good pedagogy is under the

3 2 terminology "constructivism."

4 3 Constructivism is a

5 4 teaching theory, a learning theory,

6 5 that we derive how to best teach

7 6 science, and basically it says that

8 7 students don't just learn something

9 8 because you present it in various

10 9 ways.

11 10 One has to encounter what

12 11 the student knows coming in, what

13 12 misconceptions, preconceptions, the

14 13 student has, and then facilitate

15 14 change in those preconceptions.

16 15 That's it in a very, very short

17 16 synopsis.

18 17 Q. Is that the only definition

19 18 there is about pedagogy?

20 19 A. It's probably the best --

21 20 Q. Excuse me; good pedagogy?

22 21 A. It's probably the best

23 22 short, well-agreed-upon basis of

24 23 science education in the United

25 24 States.

PAGE 18

1 00018

2 1 causes in the classroom. Some say we

3 2 want to see what we call young earth

4 3 creationism taught. There's a great

5 4 variety.

6 5 Q. Now, the plaintiffs have

7 6 indicated that you'll be testifying

8 7 about the standards of good pedagogy

9 8 and science education, why it's

10 9 important to teach students about

11 10 evolution, and why intelligent design

12 11 should not be taught in biology

13 12 classes. Does that sound accurate to

14 13 you?

15 14 A. Yes, I remember reading

16 15 that.

17 16 Q. Is that what you plan to

18 17 testify about?

19 18 A. I believe so.

20 19 Q. What is good pedagogy?

21 20 A. Well, that would take a few

22 21 weeks to describe, but a short

23 22 analysis, which I'm sure is what you

24 23 want, would involve approximately the

25 24 last 10 years, for example, maybe 15

PAGE 20

1 00020

2 1 Q. Now, who determines what a

3 2 misconception is in a student?

4 3 A. What type of misconception?

5 4 Q. Well, what is a

6 5 misconception? Who determines what

7 6 is a misconception?

8 7 A. Are we talking a science

9 8 misconception?

10 9 Q. Well, you said that part of

11 10 this is that students come into

12 11 science class with misconceptions and

13 12 it's the teacher's role to correct

14 13 those misconceptions.

15 14 A. Okay. Then I understand

16 15 this to be a science misconception.

17 16 Q. Correct.

18 17 A. The scientific community.

19 18 Q. Who is the scientific

20 19 community?

21 20 A. It is the community of

22 21 scientists and their organizations,

23 22 their journals, their writings.

24 23 Q. Is it monolithic?

25 24 A. I don't understand your



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SHEET 6 PAGE 21

1 00021  
 2 1 question.  
 3 2 Q. Is it something that has  
 4 3 just one view, the scientific  
 5 4 community?  
 6 5 A. One could look to the  
 7 6 leading scientific organizations, the  
 8 7 world's largest maybe, or possibly  
 9 8 the United States' most prestigious  
 10 9 umbrella organizations, and if they  
 11 10 all say something is a misconception,  
 12 11 then teachers would then assume --  
 13 12 and I believe correctly so -- that is  
 14 13 a scientific misconception.  
 15 14 Q. What would be examples of  
 16 15 scientific misconceptions that a  
 17 16 student would bring into a science  
 18 17 classroom on the high school level?  
 19 18 A. Dinosaurs and humans  
 20 19 coexisted.  
 21 20 Q. What else?  
 22 21 A. I can probably list a few  
 23 22 thousand.  
 24 23 Q. Give me five of them.  
 25 24 A. The earth is approximately

PAGE 23

1 00023  
 2 1 Q. Give me an example.  
 3 2 A. The law of gravity.  
 4 3 Q. How does that differ from a  
 5 4 theory, a scientific theory?  
 6 5 A. Laws typically describe  
 7 6 phenomena while theories explain  
 8 7 phenomena.  
 9 8 Q. How is it a misconception  
 10 9 that a scientific theory is less  
 11 10 important than a scientific law?  
 12 11 A. The general public, the  
 13 12 media and so forth, have a general  
 14 13 definition of theory that's used  
 15 14 outside of science, and it's that  
 16 15 it's any sort of ideas we have about  
 17 16 anything; I have a theory about such  
 18 17 and such that I just had when I got  
 19 18 up this morning.  
 20 19 Scientific theories are  
 21 20 explanations that have been  
 22 21 rigorously tested, and no matter how  
 23 22 much evidence one has for a theory,  
 24 23 it doesn't become a law, the  
 25 24 explanation never becomes a

PAGE 22

1 00022  
 2 1 10,000 years old.  
 3 2 Q. Okay.  
 4 3 A. That animals evolved due to  
 5 4 need. That a theory is somehow less  
 6 5 scientifically important than a law.  
 7 6 Q. Say that again; I didn't  
 8 7 hear you.  
 9 8 A. That somehow a theory, a  
 10 9 scientific theory, is less important  
 11 10 than a scientific law. That a  
 12 11 scientific theory, given enough  
 13 12 evidence, becomes the scientific law.  
 14 13 Are we up to five or six?  
 15 14 Q. Uh-huh.  
 16 15 Would a misconception be  
 17 16 that there is a God?  
 18 17 A. That's not a scientific  
 19 18 statement.  
 20 19 Q. But would that be a  
 21 20 misconception a science teacher would  
 22 21 have to correct in a science class?  
 23 22 A. Absolutely not.  
 24 23 Q. What is a scientific law?  
 25 24 A. It's a law within science.

PAGE 24

1 00024  
 2 1 description.  
 3 2 But the general public  
 4 3 generally uses the common term of  
 5 4 theory, the nonscientific meaning of  
 6 5 theory, to mean something that is  
 7 6 very tentative, very unknown, very  
 8 7 iffy; it can range from anything  
 9 8 about a theory about why my coffee  
 10 9 tastes bitter this morning, all the  
 11 10 way up to X-Files-type theories that  
 12 11 are on television.  
 13 12 Q. Can a scientific law be  
 14 13 disproven?  
 15 14 A. I don't like the word  
 16 15 "proven." Your question is one that  
 17 16 I find not to be able to answer.  
 18 17 Q. So, in other words, the  
 19 18 scientific law of gravity cannot be  
 20 19 disproven?  
 21 20 A. There might be evidence  
 22 21 that would disconfirm it. Prove is  
 23 22 generally a word that at least most  
 24 23 science educators that I'm aware of,  
 25 24 in the science education literature

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1 00025  
 2 1 that I am aware of, would not use the  
 3 2 word "proven" as if it's once and for  
 4 3 all. We would say confirm or  
 5 4 disconfirm. Prove is more of a  
 6 5 mathematical term, as in geometrical  
 7 6 proofs and so forth.  
 8 7 Q. So that the scientific law  
 9 8 of gravity cannot be proven?  
 10 9 A. Confirmed, disconfirmed.  
 11 10 Q. It can only be confirmed or  
 12 11 disconfirmed. Correct?  
 13 12 A. Correct.  
 14 13 Q. And if you could speak a  
 15 14 little louder, I'm having a hard time  
 16 15 hearing over the air vents.  
 17 16 A. I'll try.  
 18 17 Q. Okay?  
 19 18 Can a scientific law be  
 20 19 disconfirmed?  
 21 20 A. Science is tentative.  
 22 21 Anything is open to change; laws,  
 23 22 theories.  
 24 23 Q. But a scientific law -- how  
 25 24 does a scientific law, then, if you

PAGE 26

1 00026  
 2 1 are going to put it on a scale, how  
 3 2 does a scientific law differ in  
 4 3 weight to a scientific theory?  
 5 4 A. It does not. Both are  
 6 5 valuable.  
 7 6 Q. But both can be confirmed?  
 8 7 A. Explanations can have  
 9 8 evidence that help confirm them.  
 10 9 Laws can have evidence that help  
 11 10 confirm them; also.  
 12 11 Q. So if a theory is  
 13 12 confirmed, does it then become a  
 14 13 scientific law?  
 15 14 A. No. That is a  
 16 15 misconception.  
 17 16 Q. How does a scientific  
 18 17 theory become a scientific law?  
 19 18 A. An explanation does not  
 20 19 become a description.  
 21 20 Q. Are there any theories with  
 22 21 regard to the law of gravity?  
 23 22 A. Yes, there are some.  
 24 23 Q. Give me a couple of them.  
 25 24 A. That's outside of my area

PAGE 27

1 00027  
 2 1 of expertise.  
 3 2 Q. In your opinion, a school  
 4 3 district that requires the teaching  
 5 4 of evolution in high school biology  
 6 5 class, that's exhibiting good  
 7 6 pedagogy in science education?  
 8 7 A. I don't know if it is being  
 9 8 taught well. It's in the curriculum,  
 10 9 and I think that's prudent.  
 11 10 Q. So that as long as it's a  
 12 11 part of the curriculum, that would be  
 13 12 good teaching pedagogy, assuming it  
 14 13 is taught correctly?  
 15 14 A. That's a large assumption  
 16 15 of whether it is being taught  
 17 16 correctly or not. Again, I'm not  
 18 17 quite sure I understand your  
 19 18 question. I think it's prudent that  
 20 19 it's in the curriculum, but I don't  
 21 20 understand about then implying that  
 22 21 it's being taught well?  
 23 22 Q. Well, for you to know  
 24 23 whether something is taught well, do  
 25 24 you have to witness the teaching?

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1 00028  
 2 1 A. That's a very difficult  
 3 2 question. Part of it yes, part of it  
 4 3 no. Part of it the teacher could  
 5 4 describe how it's being taught.  
 6 5 It's always nice to be able  
 7 6 to see teaching in person, also, just  
 8 7 to see the social interactions, the  
 9 8 social skills of the teacher, the art  
 10 9 of the teacher in the classroom; but  
 11 10 to a certain extent if the teacher  
 12 11 were to describe in writing or  
 13 12 verbally to someone how they went  
 14 13 about teaching it, that would be  
 15 14 helpful, also.  
 16 15 Q. Well, then how do you as an  
 17 16 expert reach opinions about whether  
 18 17 something is good teaching pedagogy  
 19 18 or not?  
 20 19 A. From my knowledge about  
 21 20 what we think that is.  
 22 21 Q. Explain that.  
 23 22 A. As I described earlier, for  
 24 23 example, constructivism; if a teacher  
 25 24 teaching a series of items in a class



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SHEET 8 PAGE 29

1 00029  
 2 1 completely ignores or doesn't use any  
 3 2 form of constructivism within that  
 4 3 instruction, then probably  
 5 4 something's amiss.  
 6 5 Q. When you described earlier  
 7 6 your understanding of this case, how  
 8 7 did you acquire that information?  
 9 8 A. I was contacted by Vic. I  
 10 9 was sent documents that I read. I  
 11 10 think that's what you want in the  
 12 11 answer, no?  
 13 12 Q. Well, what I was asking is,  
 14 13 how did you acquire the knowledge of  
 15 14 what this case is about?  
 16 15 A. By reading the documents  
 17 16 concerning the case.  
 18 17 Q. What documents did you  
 19 18 review?  
 20 19 A. The complaint, the press  
 21 20 release, the Dover press release,  
 22 21 sections of "Of Pandas And People,"  
 23 22 sections of the Dover curriculum, a  
 24 23 small section of the Pennsylvania  
 25 24 curriculum.

PAGE 31

1 00031  
 2 1 A. Graham Bell. I think  
 3 2 that's it.  
 4 3 Q. Who is Eugenie Scott?  
 5 4 A. Eugenie Scott. She is the  
 6 5 executive director of the National  
 7 6 Center for Science Education.  
 8 7 Q. And what information did  
 9 8 she provide you about this case?  
 10 9 A. She summarized the case in  
 11 10 probably three or four minutes to me,  
 12 11 told me a couple of things that would  
 13 12 probably occur, and took a look at  
 14 13 one of my drafts of my expert report.  
 15 14 Q. How did she summarize the  
 16 15 case? What did she say to you?  
 17 16 A. That the Dover School Board  
 18 17 has decided to try to put intelligent  
 19 18 design and attacking evolution  
 20 19 language in front of the students.  
 21 20 That essentially was it.  
 22 21 Q. You said "put intelligent  
 23 22 design"?  
 24 23 A. I don't remember her exact  
 25 24 words.

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1 00030  
 2 1 MR. WALCZAK: Would that be  
 3 2 curriculum standards?  
 4 3 THE WITNESS: Yes. Thank  
 5 4 you.  
 6 5 I think that's it.. But for  
 7 6 some reason I think there's one other  
 8 7 document, but if I recall it during  
 9 8 this deposition, I'll mention it.  
 10 9 BY MR. WHITE:  
 11 10 Q. Besides speaking with your  
 12 11 attorney, did you speak to any other  
 13 12 people to acquire information about  
 14 13 this case?  
 15 14 A. Yes.  
 16 15 Q. Who?  
 17 16 A. Eugenie Scott, Eric  
 18 17 Rothschild.  
 19 18 Now, I have a question.  
 20 19 When you mean "about this case," you  
 21 20 mean about the legal facts of this  
 22 21 case or something else?  
 23 22 Q. To acquire information and  
 24 23 knowledge to help you form your  
 25 24 opinion.

PAGE 32

1 00032  
 2 1 Q. But what did you just say?  
 3 2 Again, I'm having a hard time --  
 4 3 A. Oh, I'm sorry. I think I  
 5 4 said "put."  
 6 5 Q. What does that mean, or  
 7 6 what did you interpret that to mean?  
 8 7 A. I interpret it to mean that  
 9 8 somehow in the science classroom  
 10 9 within the realm of the science  
 11 10 curriculum at Dover, that intelligent  
 12 11 design would be brought up in some  
 13 12 fashion and attacks against evolution  
 14 13 would be brought up in some fashion.  
 15 14 Q. When she said attacks on  
 16 15 evolution --  
 17 16 A. I'm not saying that I  
 18 17 remember her exact words at all.  
 19 18 Q. You also said she said a  
 20 19 couple of things would occur. What  
 21 20 were those?  
 22 21 A. That the defense would  
 23 22 probably put forth a teach the  
 24 23 controversy, and gaps and problems  
 25 24 with evolution language.

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SHEET 2 PAGE 33

1 00033  
 2 1 Q. What do you mean by  
 3 2 gaps-and-problems language?  
 4 3 A. That evolution has problems  
 5 4 with gaps and it has problems with  
 6 5 its theory, with its evidence.  
 7 6 Q. And what do you mean by  
 8 7 "teach the controversy"?  
 9 8 A. This was the language she  
 10 9 used. I don't know exactly what she  
 11 10 meant about it. I can guess.  
 12 11 Q. What did you interpret it  
 13 12 to mean?  
 14 13 A. I interpreted it to mean  
 15 14 that teaching that there's a  
 16 15 controversy within the scientific  
 17 16 community concerning evolution and  
 18 17 intelligent design.  
 19 18 Q. Is the Dover School  
 20 19 District teaching the controversy?  
 21 20 A. I would have to review the  
 22 21 documents to be sure, but the  
 23 22 reference book "Of Pandas And People"  
 24 23 has an area that instructs the  
 25 24 teacher that a controversy is taking

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1 00035  
 2 1 design within the journals that he's  
 3 2 very familiar with as a scientist.  
 4 3 Q. What question did you ask  
 5 4 him?  
 6 5 A. "Has the Journal of  
 7 6 Evolutionary Biology or the journal  
 8 7 Evolution ever had, to your  
 9 8 knowledge, a paper on intelligent  
 10 9 design?"  
 11 10 Q. And what was his answer?  
 12 11 A. No.  
 13 12 Q. Why did you need to ask him  
 14 13 that question?  
 15 14 A. These are journals I do not  
 16 15 read.  
 17 16 Q. How did you get involved in  
 18 17 this case as an expert?  
 19 18 A. I was contacted by Vic.  
 20 19 Q. By who?  
 21 20 A. Vic (indicating).  
 22 21 Q. By Vic.  
 23 22 With regard to good  
 24 23 teaching pedagogy, is it good  
 25 24 teaching pedagogy to point out

PAGE 34

1 00034  
 2 1 place. And I think, in essence, the  
 3 2 four-paragraph statement has issues  
 4 3 that may allude to that, but I'm not  
 5 4 sure that would be exactly what was  
 6 5 taken away by those who read it.  
 7 6 Q. You said she also reviewed  
 8 7 drafts of your report?  
 9 8 A. Reviewed one draft.  
 10 9 Q. Did she give you any  
 11 10 comments?  
 12 11 A. I think she said something  
 13 12 like "pretty good." There might have  
 14 13 been another comment, but I don't  
 15 14 remember. Nothing substantive.  
 16 15 Q. Who is Graham Bell?  
 17 16 A. Graham Bell is an  
 18 17 evolutionary geneticist.  
 19 18 Q. Where is he located?  
 20 19 A. McGill University.  
 21 20 Q. And what did he tell you  
 22 21 about this case?  
 23 22 A. Oh, I don't think he knew  
 24 23 anything about the case. I asked him  
 25 24 a question concerning intelligent

PAGE 36

1 00036  
 2 1 strengths and weaknesses in certain  
 3 2 scientific theories?  
 4 3 A. It depends. If the bad  
 5 4 outweighs the good, then no.  
 6 5 Q. Why is that?  
 7 6 A. If students are pointed out  
 8 7 weaknesses in some sort of  
 9 8 mathematical theory and then leave  
 10 9 the classroom thinking two plus two  
 11 10 equals five in elementary school,  
 12 11 then it didn't pay off, they leave  
 13 12 with a misconception.  
 14 13 Q. Well, with two plus two  
 15 14 equals four, would that be the  
 16 15 equivalent of a scientific law?  
 17 16 A. I'm not an expert in the  
 18 17 equivalence of mathematical laws to  
 19 18 scientific laws, so I can't answer  
 20 19 that question.  
 21 20 Q. But two plus two equals  
 22 21 four can be confirmed. Right?  
 23 22 A. I think most mathematicians  
 24 23 would agree at the elementary school  
 25 24 level that's the case, yes.

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SHEET 10 PAGE 37

1 00037  
 2 1 Q. But in the mathematical  
 3 2 community, the consensus would be  
 4 3 that two plus two equals four?  
 5 4 A. I would hope so.  
 6 5 Q. So let me understand you,  
 7 6 then. If there are more weaknesses  
 8 7 in something than strengths, students  
 9 8 should not be informed about those  
 10 9 weaknesses?  
 11 10 A. No, I didn't say that.  
 12 11 Q. Well, say again what you  
 13 12 said.  
 14 13 A. What I'm trying to say is  
 15 14 that if by teaching some weaknesses  
 16 15 you engender misconceptions and the  
 17 16 goal is not to engender those  
 18 17 particular misconceptions, then it is  
 19 18 better not to teach those particular  
 20 19 weaknesses. If students leave  
 21 20 thinking two plus two equals five,  
 22 21 this is not the goal of that  
 23 22 particular unit of education.  
 24 23 Q. When you say "the goal,"  
 25 24 who sets the goal?

PAGE 39

1 00039  
 2 1 Q. Well, when would a teacher  
 3 2 learn about that?  
 4 3 A. They would learn that the  
 5 4 state standards are there, but  
 6 5 whether they comply or not is not in  
 7 6 my realm of instruction.  
 8 7 Q. Whose realm would it be in?  
 9 8 A. I imagine compliance would  
 10 9 be some sort of state or school board  
 11 10 contractual obligation they have with  
 12 11 their school, but I'm not aware of  
 13 12 any particular answers to those  
 14 13 questions.  
 15 14 Q. So then you have no  
 16 15 knowledge whether a school board has  
 17 16 to comply with its governing state  
 18 17 academic standards?  
 19 18 A. I imagine it might go state  
 20 19 by state.  
 21 20 Q. That's an assumption?  
 22 21 A. Yes.  
 23 22 Q. You don't know?  
 24 23 A. No.  
 25 24 Q. Please give me a summary of

PAGE 38

1 00038  
 2 1 A. That's somewhat of a  
 3 2 complicated answer, and I will try to  
 4 3 make it concise. It's generally a  
 5 4 school district, school board,  
 6 5 working with standards and curriculum  
 7 6 from -- developed by their teachers,  
 8 7 generally, working with state  
 9 8 standards and working with national  
 10 9 standards and looking to the national  
 11 10 organizations of science both for  
 12 11 science education and science in  
 13 12 particular.  
 14 13 Q. When all is said and done,  
 15 14 though, a school board needs to  
 16 15 comply with its state academic  
 17 16 standards. Correct?  
 18 17 A. I don't know the legalities  
 19 18 concerning that.  
 20 19 Q. But when you are teaching  
 21 20 future teachers, do you teach them to  
 22 21 comply with whatever will be their  
 23 22 given state standard?  
 24 23 A. I don't mention anything  
 25 24 concerning that.

PAGE 40

1 00040  
 2 1 the opinions you have in this case.  
 3 2 A. Could you be more specific,  
 4 3 please?  
 5 4 Q. Your coming here as an  
 6 5 expert with opinions on behalf of the  
 7 6 plaintiffs, I would like you to  
 8 7 summarize for me your opinions.  
 9 8 A. You mean opinions  
 10 9 specifically concerning what I read  
 11 10 on the Dover Board policy?  
 12 11 Q. The opinions that you are  
 13 12 setting forth as an expert in this  
 14 13 case on behalf of the plaintiffs.  
 15 14 A. The Dover policy -- it's my  
 16 15 opinion that the Dover policy  
 17 16 engenders teachers to have bad  
 18 17 pedagogy, or shall I say poor  
 19 18 pedagogy. It requires teachers to  
 20 19 ignore the leading scientific  
 21 20 organizations in the United States.  
 22 21 It requires science teachers to  
 23 22 ignore the recommendations of the  
 24 23 major science education organizations  
 25 24 in the United States.

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SHEET 11 PAGE 41

1 00041  
 2 1 It poorly prepares students  
 3 2 for post secondary education,  
 4 3 primarily colleges and universities,  
 5 4 and I'm speaking specifically secular  
 6 5 colleges and universities. The  
 7 6 policy might help if they go to a  
 8 7 Christian university or college. And  
 9 8 it causes them to reject, or at least  
 10 9 ignore, some of the training they  
 11 10 have had in science education on how  
 12 11 to be teachers of science.  
 13 12 Q. When you say "engender,"  
 14 13 what do you mean by that word?  
 15 14 A. Facilitate.  
 16 15 Q. So, in other words, assist  
 17 16 in poor pedagogy?  
 18 17 A. Yes.  
 19 18 Q. Now, these opinions you  
 20 19 have just set forth, is there  
 21 20 anything else besides these four or  
 22 21 five things you just listed?  
 23 22 A. I would have to see my  
 24 23 expert report to see if my memory is  
 25 24 correct. As best I can recall at

PAGE 43

1 00043  
 2 1 classes?  
 3 2 A. No.  
 4 3 Q. Have you been in the  
 5 4 classroom when the four-paragraph  
 6 5 statement was read to students?  
 7 6 A. No.  
 8 7 Q. So you haven't seen any of  
 9 8 the reaction of students?  
 10 9 A. Correct.  
 11 10 Q. So the knowledge you have  
 12 11 acquired to help you form your  
 13 12 opinion, that's what has come to you  
 14 13 from your attorneys, review of  
 15 14 documents, and speaking to Eugenie  
 16 15 Scott?  
 17 16 A. Correct.  
 18 17 Q. Now, are there other  
 19 18 experts in your field of science  
 20 19 education who may disagree with your  
 21 20 opinions?  
 22 21 A. Possibly.  
 23 22 Q. Is there room for doubt in  
 24 23 an opinion?  
 25 24 A. I have no expertise on the

PAGE 42

1 00042  
 2 1 this moment, that's essentially the  
 3 2 opinions that I put in the report.  
 4 3 Q. The opinions that you bring  
 5 4 to this case, those are just your  
 6 5 opinions. Correct?  
 7 6 A. Correct.  
 8 7 Q. Do you have any personal  
 9 8 knowledge about the facts of this  
 10 9 case?  
 11 10 A. I don't understand the  
 12 11 question.  
 13 12 Q. Have you personally gone to  
 14 13 Dover?  
 15 14 A. No.  
 16 15 Q. Have you personally spoken  
 17 16 to any of the teachers from Dover?  
 18 17 A. No.  
 19 18 Q. Have you personally spoken  
 20 19 to any of the students at the Dover  
 21 20 School District?  
 22 21 A. No.  
 23 22 Q. Or any of their parents?  
 24 23 A. No.  
 25 24 Q. Have you sat in any of the

PAGE 44

1 00044  
 2 1 psychological question of whether  
 3 2 there's room for doubt in an opinion.  
 4 3 I guess maybe I don't understand your  
 5 4 question.  
 6 5 Q. Is your opinion a fact?  
 7 6 A. Could you define "fact" for  
 8 7 me?  
 9 8 Q. Is it something that is  
 10 9 certain?  
 11 10 A. It's certain to me.  
 12 11 Q. But is it certain to  
 13 12 everybody?  
 14 13 A. I haven't polled everybody.  
 15 14 Q. But you do agree that there  
 16 15 are people, experts in the field of  
 17 16 science education, who may have a  
 18 17 different opinion from you as it  
 19 18 relates to the Dover school policy?  
 20 19 A. Probably.  
 21 20 Q. Now, if the facts and  
 22 21 assumptions that you relied on to  
 23 22 form your opinion turn out to be  
 24 23 wrong, would your opinion then be  
 25 24 worthless?



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SHEET 12 PAGE 45

1 00045  
 2 1 A. If the most prestigious  
 3 2 scientific organization in the United  
 4 3 States and the largest scientific  
 5 4 association on the planet and the  
 6 5 largest science teaching organization  
 7 6 on the planet and the largest biology  
 8 7 teaching organization on the planet  
 9 8 and college biology textbooks and  
 10 9 high school biology textbooks said  
 11 10 that intelligent design and teaching  
 12 11 weaknesses in evolution that cause  
 13 12 question in the scientific community  
 14 13 as to whether evolution occurred or  
 15 14 not, then, yes, my opinion would  
 16 15 change.  
 17 16 Q. Now, you just said that if  
 18 17 there's weakness -- weakness is  
 19 18 taught about evolution to question --  
 20 19 what did you say -- the occurrence?  
 21 20 A. If it is taught that -- if  
 22 21 all those organizations I just  
 23 22 mentioned and all the textbooks I  
 24 23 just mentioned were to agree that  
 25 24 there is such weakness in

PAGE 47

1 00047  
 2 1 evolution, the theories of evolution.  
 3 2 I'm not saying that there is no such  
 4 3 thing as evolution, but just that the  
 5 4 theories about evolution may have  
 6 5 some weaknesses.  
 7 6 A. There are no weaknesses,  
 8 7 that I'm aware of, concerning whether  
 9 8 evolution occurred. Concerning how  
 10 9 evolution occurred there are various  
 11 10 opinions, scientific opinions, on how  
 12 11 evolution occurred, and they are  
 13 12 being debated in the scientific  
 14 13 community.  
 15 14 Q. But your opinion here is  
 16 15 that the Dover policy questions  
 17 16 whether evolution occurred.  
 18 17 A. I think that statement  
 19 18 definitely would engender those  
 20 19 thoughts in 15-year-old children,  
 21 20 yes.  
 22 21 Q. But is that what the  
 23 22 statement that's read to the students  
 24 23 says?  
 25 24 A. I would have to see the

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1 00046  
 2 1 evolutionary theory that it is  
 3 2 causing doubt in the scientific  
 4 3 community to the occurrence of  
 5 4 evolution, then, yes, I would change  
 6 5 my opinion.  
 7 6 Q. But if the weaknesses that  
 8 7 are being pointed out regarding  
 9 8 evolution do not cause doubt in the  
 10 9 occurrence of evolution but just  
 11 10 pointing out that evolution has some  
 12 11 weaknesses, simply, would that cause,  
 13 12 as you are saying here, the sky to  
 14 13 fall down?  
 15 14 A. I don't understand your  
 16 15 question. There are -- there is no  
 17 16 evidence to show that there is  
 18 17 weaknesses in the occurrence of  
 19 18 evolution.  
 20 19 Q. But not in the occurrence  
 21 20 of evolution, just in the theory of  
 22 21 evolution.  
 23 22 A. What do you mean by "the  
 24 23 theory of evolution"?  
 25 24 Q. The ideas that form

PAGE 48

1 00048  
 2 1 statement again. I don't have it  
 3 2 memorized.  
 4 3 Q. But from your review of all  
 5 4 the information in this case that led  
 6 5 you to write your report, is that  
 7 6 what your understanding is about the  
 8 7 statement?  
 9 8 A. Could you repeat your  
 10 9 question again? I'm sorry; I don't  
 11 10 understand.  
 12 11 Q. It's your understanding, if  
 13 12 I'm correct, that the statement read  
 14 13 to the students in the Dover School  
 15 14 District says that there's weaknesses  
 16 15 in the idea of whether evolution even  
 17 16 occurred.  
 18 17 A. I think that's what  
 19 18 15-year-old children would take away  
 20 19 from hearing that statement, yes.  
 21 20 Q. But is that, from your  
 22 21 memory, what the statement says?  
 23 22 MR. WALCZAK: He's already  
 24 23 said that he doesn't remember the  
 25 24 exact language. If you want to show



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SHEET 13 PAGE 49

1 00049  
 2 1 him the statement, then maybe he can  
 3 2 answer the question.  
 4 3 BY MR. WHITE:  
 5 4 Q. From your review of  
 6 5 everything -- you have been paid, I  
 7 6 assume?  
 8 7 A. No.  
 9 8 Q. No? Okay. But you have  
 10 9 spent time looking over the  
 11 10 information?  
 12 11 A. A little bit.  
 13 12 Q. You have prepared an expert  
 14 13 report?  
 15 14 A. Yes.  
 16 15 Q. Okay. From your  
 17 16 understanding of that, is it that the  
 18 17 statement that is being read to the  
 19 18 students that there is weakness in  
 20 19 the idea that there is even the  
 21 20 occurrence of evolution?  
 22 21 MR. WALCZAK: I'm going to  
 23 22 object. You have asked this question  
 24 23 now at least twice, maybe three  
 25 24 times. He has testified to what,

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1 00051  
 2 1 statement, from your memory, was?  
 3 2 A. Not word for word, no.  
 4 3 MR. WHITE: Why don't we  
 5 4 take a break.  
 6 5 (Recess taken.)  
 7 6 (Alters Exhibit 1 was  
 8 7 marked for identification.)  
 9 8 BY MR. WHITE:  
 10 9 Q. I want to show you what has  
 11 10 been marked as Exhibit 1. If you can  
 12 11 tell us what that is.  
 13 12 A. This is my expert report.  
 14 13 Q. Is your expert report, is  
 15 14 that a true and correct and complete  
 16 15 expression of the opinions that you  
 17 16 bring to this case?  
 18 17 A. I believe so.  
 19 18 Q. Is that a yes?  
 20 19 A. Are you asking me whether I  
 21 20 have other opinions relevant to this  
 22 21 case?  
 23 22 Q. Yes.  
 24 23 A. Probably. I haven't  
 25 24 formulated them.

PAGE 50

1 00050  
 2 1 from his recollections --  
 3 2 MR. WHITE: Objections are  
 4 3 not supposed to be an argument here.  
 5 4 MR. WALCZAK: Well --  
 6 5 BY MR. WHITE:  
 7 6 Q. So if you can't answer my  
 8 7 question, we can get to it later.  
 9 8 MR. WALCZAK: Are you  
 10 9 asking him about what this  
 11 10 engenders?  
 12 11 MR. WHITE: I'm asking him  
 13 12 a question --  
 14 13 MR. WALCZAK: Okay. Why  
 15 14 don't you restate your question.  
 16 15 BY MR. WHITE:  
 17 16 Q. Well, my question is, from  
 18 17 your memory that led you to draft  
 19 18 your report, is it that the statement  
 20 19 being read to students is that there  
 21 20 is weakness with the idea that  
 22 21 evolution ever occurred?  
 23 22 A. It can be interpreted to  
 24 23 mean that.  
 25 24 Q. But is that what the

PAGE 52

1 00052  
 2 1 Q. Do you plan on  
 3 2 supplementing your report with any  
 4 3 new opinions?  
 5 4 A. Not presently, no.  
 6 5 Q. So besides any unformulated  
 7 6 opinions, your formulated opinions  
 8 7 are what are expressed in this  
 9 8 report. Correct?  
 10 9 A. Yes.  
 11 10 Q. Now, who prepared this  
 12 11 report?  
 13 12 A. I did, with the help of  
 14 13 Vic.  
 15 14 Q. Anyone else help you,  
 16 15 besides Eugenie Scott who looked over  
 17 16 a draft?  
 18 17 A. No one.  
 19 18 Q. How long did it take you to  
 20 19 prepare and write this report?  
 21 20 A. Ten, maybe 15 hours.  
 22 21 Q. Was this report prepared as  
 23 22 carefully as you would prepare your  
 24 23 regular professional work?  
 25 24 A. I don't know how to compare

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SHEET 14 PAGE 53

1 00053  
 2 1 the two, but I certainly took it  
 3 2 seriously and did it what I  
 4 3 considered to be carefully.  
 5 4 Q. Are you related to anyone  
 6 5 who's involved in this litigation?  
 7 6 A. Not that I'm aware of.  
 8 7 Q. Do you belong to any of the  
 9 8 organizations that are involved in  
 10 9 this litigation, for example, the  
 11 10 American Civil Liberties Union?  
 12 11 A. No.  
 13 12 Q. The Americans United for  
 14 13 Separation of Church and State?  
 15 14 A. No.  
 16 15 Q. Are you a member of the  
 17 16 National Center for Science  
 18 17 Education?  
 19 18 A. Yes.  
 20 19 Q. How long have you been a  
 21 20 member of that group?  
 22 21 A. I don't know exactly, but I  
 23 22 think approximately ten years.  
 24 23 Q. As a member, what's your  
 25 24 role in the organization?

PAGE 54

1 00054  
 2 1 A. I don't know if members  
 3 2 have a role. I receive a newsletter.  
 4 3 I don't know if members have a role  
 5 4 as far as responsibility, work,  
 6 5 something like that.  
 7 6 Q. Now, besides being a  
 8 7 member, do you have any other role in  
 9 8 the organization?  
 10 9 A. Yes.  
 11 10 Q. What role is that?  
 12 11 A. I'm an associate editor of  
 13 12 their journal.  
 14 13 Q. What's the name of the  
 15 14 journal?  
 16 15 A. Reports of the National  
 17 16 Center for Science Education.  
 18 17 Q. Anything else? Any other  
 19 18 role in the organization?  
 20 19 A. Yes.  
 21 20 Q. What else?  
 22 21 A. Currently as of February,  
 23 22 March, I'm a member of the board.  
 24 23 Q. That's the governing board  
 25 24 of the organization?

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1 00055  
 2 1 A. Correct.  
 3 2 Q. How did you become the  
 4 3 associate editor of their  
 5 4 publication?  
 6 5 A. I was asked to be.  
 7 6 Q. By whom?  
 8 7 A. Andrew Petto.  
 9 8 Q. Who is he?  
 10 9 A. The editor of the journal.  
 11 10 Q. What do you do as an  
 12 11 associate editor?  
 13 12 A. He occasionally sends me  
 14 13 articles of an education focus and  
 15 14 asks me to review them or my opinion  
 16 15 on them.  
 17 16 Q. Is that a peer-review  
 18 17 journal?  
 19 18 A. Yes. I don't know if all  
 20 19 articles in it are peer reviewed, but  
 21 20 certainly many of them are.  
 22 21 Q. And when you review a  
 23 22 potential article, what exactly do  
 24 23 you do with it?  
 25 24 A. I read it through, see if

PAGE 56

1 00056  
 2 1 it's accurate, to the best of my  
 3 2 ability, see if my areas of expertise  
 4 3 can help the author improve it, make  
 5 4 comments on it for improvement, if it  
 6 5 needs comments for improvement.  
 7 6 Generally, the editor asks whether in  
 8 7 my opinion it's appropriate for the  
 9 8 journal. There are other things,  
 10 9 too, but that's basically it.  
 11 10 Q. How does that role differ,  
 12 11 if it does, from a reviewer for the  
 13 12 peer-review aspect of the journal?  
 14 13 A. I am part of the peer  
 15 14 review.  
 16 15 Q. So does every article that  
 17 16 is going to be published in that  
 18 17 publication go through you?  
 19 18 A. No.  
 20 19 Q. Is it just articles where  
 21 20 you would have an area of expertise  
 22 21 in them?  
 23 22 A. Yes.  
 24 23 Q. Now, you are a member of  
 25 24 the board since the early part of

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SHEET 15 PAGE 57

1 00057  
 2 1 2005?  
 3 2 A. Yes.  
 4 3 Q. How did you become a member  
 5 4 of the board?  
 6 5 A. I was asked to be.  
 7 6 Q. By whom?  
 8 7 A. If I remember correctly --  
 9 8 I can remember correctly --  
 10 9 Q. I'm sorry; did you say can  
 11 10 or can't?  
 12 11 A. I can remember correctly.  
 13 12 I was at NCSE, the National Center  
 14 13 for Science Education, and I was  
 15 14 asked by the president of the board  
 16 15 whether I would consider being a  
 17 16 member of the board.  
 18 17 Q. Who's the president?  
 19 18 A. Kevin Padian.  
 20 19 Q. Can you spell that for her,  
 21 20 too?  
 22 21 A. Kevin. Padian,  
 23 22 P-A-D-I-A-N.  
 24 23 Q. Who is Kevin Padian?  
 25 24 A. What would you like to

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1 00059  
 2 1 year, they help answer questions or  
 3 2 provide advice to the executive  
 4 3 director. I believe in some  
 5 4 occasions they might help out in  
 6 5 fundraising.  
 7 6 I think that's about it.  
 8 7 There might be something else, but I  
 9 8 have not been given a list of things  
 10 9 that board members do.  
 11 10 Q. Do board members direct the  
 12 11 path of the organization?  
 13 12 A. I don't know that to be  
 14 13 true.  
 15 14 Q. What is the mission of the  
 16 15 National Center for Science  
 17 16 Education, if it has one?  
 18 17 A. Well, I don't remember the  
 19 18 exact words, but it's to defend the  
 20 19 teaching of evolution in public  
 21 20 schools and to promote science  
 22 21 education in general.  
 23 22 Q. And defend the teaching of  
 24 23 evolution in public schools from  
 25 24 whom?

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1 00058  
 2 1 know?  
 3 2 Q. Who is he and what does he  
 4 3 do?  
 5 4 A. He's a paleontologist at  
 6 5 the University of California at  
 7 6 Berkeley.  
 8 7 Q. Where is the National  
 9 8 Center for Science Education based  
 10 9 out of?  
 11 10 A. It's a city next to  
 12 11 Berkeley. I can't recall the name of  
 13 12 the city.  
 14 13 Q. What do you do as a board  
 15 14 member for the National Center for  
 16 15 Science Education?  
 17 16 A. So far I have done nothing,  
 18 17 no role as board member in the month  
 19 18 or two since I have been on the  
 20 19 board.  
 21 20 Q. What do board members do  
 22 21 for that organization?  
 23 22 A. I'm not quite knowledgeable  
 24 23 of the full extent, but I believe  
 25 24 they give opinions, they meet once a

PAGE 60

1 00060  
 2 1 A. Those that would like to  
 3 2 see it diminished and/or removed.  
 4 3 Q. Now, for evolution to be  
 5 4 diminished, what do you mean by that?  
 6 5 A. There are probably a  
 7 6 thousand ways in which the teaching  
 8 7 of evolution could be diminished, but  
 9 8 one way may simply be that teachers  
 10 9 will spend less time teaching it.  
 11 10 Q. Well, what's the role of a  
 12 11 teacher when it comes to deciding how  
 13 12 much time they should spend on a  
 14 13 particular subject?  
 15 14 A. That's another complicated  
 16 15 answer and varies from teacher to  
 17 16 teacher, but generally the time  
 18 17 allocation is devoted, as it is in  
 19 18 Dover, by the curriculum.  
 20 19 Q. So if a teacher teaches  
 21 20 something in compliance with the  
 22 21 curriculum, then the teacher is  
 23 22 meeting his or her obligations as a  
 24 23 teacher?  
 25 24 A. The operative word in that

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SHEET 16 PAGE 61

1 00061  
 2 1 question is "if."  
 3 2 Q. So I just asked you, if.  
 4 3 A. The teacher can discuss  
 5 4 various areas of evolution and not  
 6 5 discuss other areas of evolution  
 7 6 because the teacher feels pressured  
 8 7 discussing evolution.  
 9 8 Q. You didn't answer my  
 10 9 question.  
 11 10 A. Okay. Could you repeat  
 12 11 your question?  
 13 12 Q. I said if a teacher is in  
 14 13 compliance with the curriculum, is  
 15 14 the teacher properly teaching the  
 16 15 course?  
 17 16 A. "Properly" in that you mean  
 18 17 the best pedagogy possible?  
 19 18 Q. Adequate pedagogy.  
 20 19 A. I don't know that  
 21 20 necessarily complying with the  
 22 21 curriculum then implies adequate  
 23 22 pedagogy.  
 24 23 Q. Well, meeting the standards  
 25 24 set by that particular state.

PAGE 63

1 00063  
 2 1 compliance with the governing state  
 3 2 academic requirements," and the  
 4 3 teacher did that, would then the  
 5 4 teacher be exhibiting good pedagogy,  
 6 5 at least in the teacher's mind?  
 7 6 A. I have no idea of what  
 8 7 would be in the teacher's mind.  
 9 8 Q. So good pedagogy, then,  
 10 9 lies with the teacher?  
 11 10 A. No. It's not simply a  
 12 11 matter of what goes on in the  
 13 12 teacher's head.  
 14 13 There is good pedagogy and  
 15 14 there is bad pedagogy; but at the end  
 16 15 of the day the teacher feels that  
 17 16 they have facilitated learning well  
 18 17 in their students, then probably that  
 19 18 teacher would feel that they have  
 20 19 done a good job of teaching that day.  
 21 20 Whether in fact or not they have is  
 22 21 another point.  
 23 22 Q. But if a teacher -- this is  
 24 23 a general rule -- if a teacher  
 25 24 teaches pursuant to the curriculum

PAGE 62

1 00062  
 2 1 A. I don't know if states  
 3 2 delineate what good pedagogy or  
 4 3 adequate pedagogy are.  
 5 4 Q. Meaning the standards of  
 6 5 the school board?  
 7 6 A. I don't know if the school  
 8 7 board delineates what adequate  
 9 8 pedagogy is.  
 10 9 Q. Who determines adequate  
 11 10 pedagogy?  
 12 11 A. By and large it's the  
 13 12 individual teachers decide at the end  
 14 13 of the day if they have done a fairly  
 15 14 good job or not.  
 16 15 Q. So a teacher who teaches in  
 17 16 compliance with the curriculum can at  
 18 17 the end of the day say "I did good  
 19 18 pedagogy today"?  
 20 19 A. Presuming that the school  
 21 20 board has what others might consider  
 22 21 an appropriate amount, in this case,  
 23 22 of time devoted to the subject.  
 24 23 Q. And if the school board  
 25 24 said to the teacher "Teach in

PAGE 64

1 00064  
 2 1 required by the school district and  
 3 2 pursuant to the state governing  
 4 3 standards, then the teacher  
 5 4 reasonably is adequately teaching the  
 6 5 students?  
 7 6 A. No, I don't believe so.  
 8 7 You are conflating the difference  
 9 8 between good teaching and "covering"  
 10 9 the material.  
 11 10 Q. You'll agree that not all  
 12 11 teachers are the same. Right?  
 13 12 A. Correct.  
 14 13 Q. Now, a teacher needs to  
 15 14 cover material so that students can  
 16 15 advance to the next grade. Correct?  
 17 16 A. Presumably.  
 18 17 Q. Well, isn't that a general  
 19 18 goal of a teacher?  
 20 19 A. Well, just because the  
 21 20 teacher "covers" the material doesn't  
 22 21 mean the student learned the  
 23 22 material.  
 24 23 Q. But if a student then goes  
 25 24 through the course and is able to



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SHEET 17 PAGE 65

1 00065  
 2 1 take a standardized exam and passes  
 3 2 it --  
 4 3 A. Provided the standardized  
 5 4 exam is a good instrument to measure  
 6 5 learning.  
 7 6 Q. Well, it's a standardized  
 8 7 exam, and it depends on whatever that  
 9 8 state's standard is. Correct?  
 10 9 A. I don't know. I would have  
 11 10 to see it.  
 12 11 Q. Now, can a teacher be a  
 13 12 good teacher but not cover the  
 14 13 curriculum?  
 15 14 A. Could you define "good" for  
 16 15 me?  
 17 16 Q. Well, you have been using  
 18 17 these terms, "good, poor pedagogy."  
 19 18 Can a teacher have good pedagogy, as  
 20 19 you have been using it, but not cover  
 21 20 all of the curriculum?  
 22 21 A. They may use good pedagogy  
 23 22 in what they are teaching, but it's  
 24 23 another question of the coverage.  
 25 24 They may do an excellent job teaching

PAGE 67

1 00067  
 2 1 Q. So then what is the -- then  
 3 2 explain to me for a biology teacher  
 4 3 in high school what should that  
 5 4 teacher's goal be with regard to his  
 6 5 or her students.  
 7 6 A. To increase understanding  
 8 7 and knowledge in biology in relation  
 9 8 to the school curriculum.  
 10 9 Q. Also, in relation to the  
 11 10 state standards?  
 12 11 A. Well, again, that brings us  
 13 12 back to what I mentioned previously.  
 14 13 It depends on how the school derives  
 15 14 its curriculum.  
 16 15 The schools that I'm aware  
 17 16 of and the schools that I've read  
 18 17 about develop their curriculum in  
 19 18 consultation with their science  
 20 19 teachers, science specialists,  
 21 20 possibly, if the school board has  
 22 21 them, state standards, national  
 23 22 standards, recommendations from  
 24 23 scientific organizations concerning  
 25 24 education, and recommendations and

PAGE 66

1 00066  
 2 1 one part, and then if they don't  
 3 2 cover other parts of the curriculum,  
 4 3 that's another question.  
 5 4 Q. So what is the goal of a  
 6 5 teacher?  
 7 6 A. To facilitate learning.  
 8 7 Q. And how does a teacher  
 9 8 facilitate learning in the public  
 10 9 high school?  
 11 10 A. Any teacher, science  
 12 11 teacher, biology teacher?  
 13 12 Q. Well, let's stick with your  
 14 13 area, science.  
 15 14 A. Could you focus the  
 16 15 question?  
 17 16 Q. Teaching biology class.  
 18 17 A. It would depend on the  
 19 18 particular concept being taught;  
 20 19 however, again, I will go back to the  
 21 20 general basis of constructivism, in  
 22 21 general, is our major learning theory  
 23 22 and methods derived from that  
 24 23 learning theory for science education  
 25 24 in the United States.

PAGE 68

1 00068  
 2 1 positions of national science  
 3 2 education organizations.  
 4 3 Q. So increasing knowledge and  
 5 4 understanding biology in relation to  
 6 5 the school's curriculum -- is that  
 7 6 what you said -- that's a goal of a  
 8 7 teacher?  
 9 8 A. Yes.  
 10 9 Q. And the school curriculum  
 11 10 is derived through these various  
 12 11 steps you were just talking about?  
 13 12 A. I don't know specifically  
 14 13 the Dover District does that, but my  
 15 14 understanding in general, that's how  
 16 15 a curricula is developed.  
 17 16 Q. And school curriculum,  
 18 17 generally, is supposed to be in  
 19 18 compliance with the state governing  
 20 19 standards. Correct?  
 21 20 A. Again, I don't know the  
 22 21 legalities concerning that.  
 23 22 Q. But in your area of  
 24 23 expertise of science education, you  
 25 24 have no knowledge on this matter?



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SHEET 18 PAGE 69

1 00069  
 2 1 A. I have no knowledge that  
 3 2 there aren't particular states that  
 4 3 have varying rules concerning that.  
 5 4 Q. So when you are teaching  
 6 5 teachers to teach and they graduate  
 7 6 from McGill, are they, as a general  
 8 7 rule, staying in Canada to teach?  
 9 8 A. I would say the majority of  
 10 9 the high school teachers are not from  
 11 10 Canada. Of the ones I teach at  
 12 11 Harvard, almost all of them are from  
 13 12 the United States. The elementary  
 14 13 school teachers are primarily from  
 15 14 Canada.  
 16 15 Q. And they graduate from  
 17 16 either Harvard or McGill and they go  
 18 17 off to a high school in Nebraska,  
 19 18 let's say, okay, what have they  
 20 19 learned from you as far as how they  
 21 20 are supposed to properly teach in  
 22 21 compliance with the governing  
 23 22 standards of Nebraska?  
 24 23 A. Very little, if anything.  
 25 24 The compliance issue changes from

PAGE 71

1 00071  
 2 1 you are teaching teachers to do?  
 3 2 A. I teach the methods on how  
 4 3 to teach science.  
 5 4 Q. And one of them is this  
 6 5 constructivism?  
 7 6 A. All of them are based,  
 8 7 basically, upon constructivism that I  
 9 8 teach.  
 10 9 Q. Are there other methods of  
 11 10 teaching besides constructivism,  
 12 11 teaching science?  
 13 12 A. I have read others who base  
 14 13 some of their teaching methods on  
 15 14 other learning theories besides  
 16 15 constructivism, but, again, I go back  
 17 16 to the major, most-accepted theory of  
 18 17 education and science education is  
 19 18 constructivism.  
 20 19 Q. What are some of these  
 21 20 other theories, teaching theories?  
 22 21 A. Some feel that simply  
 23 22 having students do science they will  
 24 23 discover the methods and theories of  
 25 24 science and laws of science on their

PAGE 70

1 00070  
 2 1 school to school, school district to  
 3 2 school district. Many of the  
 4 3 students may go to private schools in  
 5 4 which the compliance issue is  
 6 5 compliance within that particular  
 7 6 school and maybe not even a school  
 8 7 board.  
 9 8 Q. So then who determines  
 10 9 compliance?  
 11 10 A. Compliance, to me, is a  
 12 11 legal term; it's not in my area of  
 13 12 expertise.  
 14 13 Q. So what do you teach  
 15 14 teachers as far as how they are  
 16 15 supposed to comply with school  
 17 16 curriculum or state standards?  
 18 17 A. Teachers, in my experience,  
 19 18 don't need to be taught how to read  
 20 19 curriculum and understand what's to  
 21 20 be done.  
 22 21 Q. Do you teach teachers how  
 23 22 to prepare lesson plans?  
 24 23 A. No.  
 25 24 Q. So what is it exactly that

PAGE 72

1 00072  
 2 1 own. Some feel that you do not need  
 3 2 to diagnose misconceptions of the  
 4 3 students ahead of time, that  
 5 4 facilitating change in that regard is  
 6 5 not that prudent. And that covers a  
 7 6 wide variety of other teaching  
 8 7 methods.  
 9 8 Q. Now, are these other  
 10 9 teaching methods taught in  
 11 10 universities?  
 12 11 A. Not that I am aware of.  
 13 12 Q. So no other universities,  
 14 13 that you are aware of, teach teachers  
 15 14 how to teach these other methods in  
 16 15 high school biology classes?  
 17 16 A. I have not polled other  
 18 17 universities' science instructors to  
 19 18 find out what they teach; but when I  
 20 19 attend national conferences and so  
 21 20 forth, I see very little, if  
 22 21 anything, of other things that aren't  
 23 22 based upon some form of  
 24 23 constructivism.  
 25 24 Q. Do you have a business

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SHEET 19 PAGE 73

1 00073  
 2 1 relationship with anyone or any  
 3 2 entity involved in this case?  
 4 3 A. I don't understand the  
 5 4 question.  
 6 5 Q. I mean, do you have any  
 7 6 business relationship with any of the  
 8 7 book publishers in this case?  
 9 8 A. No.  
 10 9 Q. Or any financial interest  
 11 10 at all in this case?  
 12 11 A. No.  
 13 12 Q. And you say you are not  
 14 13 being paid?  
 15 14 A. Correct.  
 16 15 Q. Why is that?  
 17 16 A. Part of my job at McGill  
 18 17 University, and which I am paid to  
 19 18 do, is approximately 40 percent  
 20 19 research scholarship, approximately  
 21 20 40 percent teaching, and  
 22 21 approximately 20 percent service.  
 23 22 Those figures aren't rigid, but  
 24 23 that's generally it, and I consider  
 25 24 this part of service.

PAGE 74

1 00074  
 2 1 Q. How is this part of  
 3 2 service?  
 4 3 A. Well, I help -- think I'm  
 5 4 helping science education, or at  
 6 5 least hope that I am.  
 7 6 Q. What other service projects  
 8 7 do you do to fulfill this 20 percent?  
 9 8 A. Speaking engagements,  
 10 9 primarily.  
 11 10 Q. Speaking engagements where?  
 12 11 A. Universities, conferences,  
 13 12 museums, sometimes television, radio,  
 14 13 doing interviews with the press.  
 15 14 Q. So then McGill University  
 16 15 paid your fare down here?  
 17 16 A. No.  
 18 17 Q. Who paid your fare to come  
 19 18 down here?  
 20 19 A. I did.  
 21 20 Q. Are you going to be  
 22 21 reimbursed?  
 23 22 A. I hope so.  
 24 23 Q. How long have you been at  
 25 24 McGill University as a teacher?

PAGE 75

1 00075  
 2 1 A. Just finishing my eighth  
 3 2 year.  
 4 3 (Alters Exhibit 2 was  
 5 4 marked for identification.)  
 6 5 BY MR. WHITE:  
 7 6 Q. Let me show you what has  
 8 7 been marked as Exhibit 2. Is this  
 9 8 the press release you were talking  
 10 9 about earlier?  
 11 10 A. Yes, it is. This is one of  
 12 11 the items I read in preparation of my  
 13 12 expert report.  
 14 13 And I did remember during  
 15 14 break another person which I spoke to  
 16 15 concerning the preparation of my  
 17 16 expert report, and that was Eric  
 18 17 Modsky -- Nick Modsky of the National  
 19 18 Center for Science Education.  
 20 19 Q. And how did Nick help you  
 21 20 prepare your expert report?  
 22 21 A. I believe he provided me  
 23 22 with a document. It may have been  
 24 23 this document, this press release.  
 25 24 In fact, I'm very sure it is.

PAGE 76

1 00076  
 2 1 Q. Are you talking about  
 3 2 Exhibit 2 there?  
 4 3 A. Yes.  
 5 4 Q. What else, if anything, did  
 6 5 Nick Modsky do to help you with your  
 7 6 report?  
 8 7 A. I believe that was it.  
 9 8 Q. Now, on this Exhibit 2  
 10 9 towards the bottom third of Page 1  
 11 10 and carrying over to the second page,  
 12 11 it notes the updating of the  
 13 12 curriculum.  
 14 13 Do you see that in the  
 15 14 first indented paragraph, which says:  
 16 15 "Students will be made aware of  
 17 16 gaps/problems in Darwin's theory and  
 18 17 of other theories of evolution  
 19 18 including but not limited to  
 20 19 intelligent design, the origin of  
 21 20 life is not taught?"  
 22 21 A. Yes.  
 23 22 Q. Now, as far as you know, is  
 24 23 that statement read to students in  
 25 24 the Dover School District?

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SHEET 20 PAGE 77

1 00077  
 2 1 A. To my knowledge, no.  
 3 2 Q. Two paragraphs above from  
 4 3 that is a paragraph that begins:  
 5 4 "Teachers in the science department  
 6 5 researched and recommended to the  
 7 6 administration the science textbook  
 8 7 'Biology' (Prentice Hall) for its  
 9 8 high school biology class?"  
 10 9 A. Yes.  
 11 10 Q. And it goes on to say that  
 12 11 the school district purchased many  
 13 12 copies of those. Are you familiar  
 14 13 with that book, "Biology"?  
 15 14 A. I remember reviewing a copy  
 16 15 of it; I believe it was the late  
 17 16 '90s. I can't recall exactly, but it  
 18 17 was somewhere in the late '90s.  
 19 18 Q. Who did you review that  
 20 19 for?  
 21 20 A. Prentice Hall.  
 22 21 Q. When you say review it,  
 23 22 what do you mean by that?  
 24 23 A. They had me read a section  
 25 24 of the book and make comments.

PAGE 79

1 00079  
 2 1 for any other entity?  
 3 2 A. No.  
 4 3 Q. Have you reviewed it for  
 5 4 yourself?  
 6 5 A. Yes.  
 7 6 Q. The entire book?  
 8 7 A. I believe I read the entire  
 9 8 book when it first came out, the  
 10 9 second -- I believe Second Edition  
 11 10 in -- oh, ten years ago. I have  
 12 11 since read, due to this case,  
 13 12 sections of it.  
 14 13 Q. Which sections of it have  
 15 14 you recently reviewed?  
 16 15 A. I read Page -- a paragraph  
 17 16 on Page 99 and 100 solely because I  
 18 17 had it marked with a Post-it note  
 19 18 from ten years ago. I read the  
 20 19 Conclusions section. There's a  
 21 20 section in the back of the book  
 22 21 titled something like A Note To The  
 23 22 Teachers, something like that, I  
 24 23 can't recall exactly; I read that. I  
 25 24 believe that was it.

PAGE 78

1 00078  
 2 1 Q. Do you remember which  
 3 2 section of the book you read?  
 4 3 A. Probably the evolution  
 5 4 section, but, no, I don't recall.  
 6 5 Too many years ago.  
 7 6 Q. And this "Biology"  
 8 7 textbook, do you recall if that's the  
 9 8 one by Professors Miller and Levine?  
 10 9 A. Yes, it is.  
 11 10 Q. And that's the recommended  
 12 11 textbook in Dover High School?  
 13 12 A. That's what I understand  
 14 13 from reading these documents.  
 15 14 Q. The next paragraph talks  
 16 15 about the book "Of Pandas And  
 17 16 People"?  
 18 17 A. Yes.  
 19 18 Q. Have you ever reviewed "Of  
 20 19 Pandas And People"?  
 21 20 A. Reviewed for a publisher?  
 22 21 Q. Well, either for a  
 23 22 publisher -- first, for a publisher.  
 24 23 A. No.  
 25 24 Q. Have you ever reviewed it

PAGE 80

1 00080  
 2 1 Q. And the version you have  
 3 2 recently read is the most recent  
 4 3 version of "Of Pandas And People"?  
 5 4 A. To my knowledge, yes.  
 6 5 Q. It's the Second Edition?  
 7 6 A. I remember looking in the  
 8 7 front for this case and there were  
 9 8 two dates, and it was -- I believe  
 10 9 '99 comes to mind, but maybe it was  
 11 10 '92. In any case, it had two dates,  
 12 11 so it would be the Second Edition.  
 13 12 Q. Now, on this Exhibit 2 at  
 14 13 the bottom of Page 1 to the bottom of  
 15 14 Page 2, that is the statement that is  
 16 15 read to students at the Dover School  
 17 16 District?  
 18 17 A. That's my understanding  
 19 18 from reading the complaint.  
 20 19 Q. Would you do me a favor,  
 21 20 please, and just read that  
 22 21 statement.  
 23 22 MR. WALCZAK: To himself or  
 24 23 out loud?  
 25 24 MR. WHITE: Out Loud.

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SHEET 21 PAGE 81

1 00081  
 2 1 Thank you, Vic.  
 3 2 THE WITNESS: The statement  
 4 3 starting with "The Pennsylvania  
 5 4 academic standards"?  
 6 5 BY MR. WHITE:  
 7 6 Q. Yes.  
 8 7 A. "The Pennsylvania academic  
 9 8 standards requires students to learn  
 10 9 about Darwin's theory of evolution  
 11 10 and eventually take a standardized  
 12 11 test of which evolution is a part.  
 13 12 Because Darwin's theory is a theory,  
 14 13 it continues to be tested as new  
 15 14 evidence is discovered. The theory  
 16 15 is not fact. Gaps in the theory  
 17 16 exist for which there is no  
 18 17 evidence. The theory is defined as a  
 19 18 well-tested explanation that unifies  
 20 19 a broad range of observations.  
 21 20 "Intelligent design is an  
 22 21 explanation of the origin of life  
 23 22 that differs from Darwin's view. The  
 24 23 reference book 'Of Pandas And People'  
 25 24 is available for students who might

PAGE 83

1 00083  
 2 1 Q. Do you know when during the  
 3 2 biology class it's read the one time?  
 4 3 A. No.  
 5 4 Q. Do you know whether the  
 6 5 student -- or this statement is read  
 7 6 to students who are not in attendance  
 8 7 when it's read the one time?  
 9 8 A. I recall something in the  
 10 9 teachers' letter to the  
 11 10 superintendent about students may opt  
 12 11 out, and I don't understand from the  
 13 12 letter whether it meant they can opt  
 14 13 out of the statement or not.  
 15 14 Q. So from what you  
 16 15 understand, then, is that a student  
 17 16 does not have to be in the classroom  
 18 17 when this about a one-minute  
 19 18 statement is read?  
 20 19 A. I'm not sure I understand  
 21 20 from the teachers' letter whether  
 22 21 that's the case or not, but it's  
 23 22 vague enough to where I would ask if  
 24 23 that's a possibility.  
 25 24 Q. Is this statement attached

PAGE 82

1 00082  
 2 1 be interested in gaining an  
 3 2 understanding of what intelligent  
 4 3 design actually involves. With  
 5 4 respect to any theory, students are  
 6 5 encouraged to keep an open mind. The  
 7 6 school leaves the discussion of the  
 8 7 origin of life to individual students  
 9 8 and their families. As a  
 10 9 standards-driven district, class  
 11 10 instruction focuses upon preparing  
 12 11 students to achieve proficiency on  
 13 12 standards-based achievements."  
 14 13 Q. How often --  
 15 14 A. I'm sorry; "standards-based  
 16 15 assessments."  
 17 16 Q. That's the final words of  
 18 17 the statement?  
 19 18 A. Yes.  
 20 19 Q. How often is this statement  
 21 20 read to students in the Dover School  
 22 21 District?  
 23 22 A. I believe, from the press  
 24 23 release and the complaint, it was  
 25 24 read once.

PAGE 84

1 00084  
 2 1 to any of the textbooks used in the  
 3 2 Dover High School, as far as you  
 4 3 know?  
 5 4 A. No.  
 6 5 Q. Is this statement posted  
 7 6 anywhere in the Dover High School  
 8 7 classrooms?  
 9 8 A. Not that I'm aware of.  
 10 9 Q. Have you interviewed any  
 11 10 students who have heard this  
 12 11 statement to find out what their  
 13 12 views are with regard to this  
 14 13 statement?  
 15 14 A. No.  
 16 15 Q. Do you have any studies to  
 17 16 show that the reading of this  
 18 17 statement to students has been  
 19 18 detrimental to their education?  
 20 19 A. No.  
 21 20 Q. Have you spoken to any  
 22 21 students or parents who have  
 23 22 indicated that their education at  
 24 23 Dover High School has been harmed by  
 25 24 hearing this statement?



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SHEET 22 PAGE 85

1 00085  
 2 1 A. No.  
 3 2 Q. According to Exhibit 2, and  
 4 3 from your understanding, "Of Pandas  
 5 4 And People" is not a required  
 6 5 textbook in that Dover biology  
 7 6 classroom. Correct?  
 8 7 A. Correct.  
 9 8 Q. And the Dover School  
 10 9 District has the "Of Pandas And  
 11 10 People" book as a reference book?  
 12 11 A. Correct.  
 13 12 Q. Do you know whether that  
 14 13 book is kept in the classroom for the  
 15 14 students?  
 16 15 A. I do not know.  
 17 16 Q. Do you know whether "Of  
 18 17 Pandas And People" is in the main  
 19 18 library?  
 20 19 A. I do not know.  
 21 20 Q. Do you know whether there  
 22 21 are any books in the library at the  
 23 22 Dover High School that may be  
 24 23 critical of evolution?  
 25 24 A. I know of no books within

PAGE 86

1 00086  
 2 1 the Dover library.  
 3 2 Q. Would it be improper to  
 4 3 have a book in the Dover public  
 5 4 school library that is critical of  
 6 5 the theory of evolution?  
 7 6 A. I believe the books that  
 8 7 are in a school library should be  
 9 8 decided upon by the local community,  
 10 9 and I have no problem with "Of Pandas  
 11 10 And People" being -- if I lived in  
 12 11 the area and I sent a child to the  
 13 12 school, I have no problems with "Of  
 14 13 Pandas And People" being in the  
 15 14 school library.  
 16 15 Q. Do you have any problem  
 17 16 with any student reading "Of Pandas  
 18 17 And People"?  
 19 18 A. I would like to see the  
 20 19 student told ahead of time that this  
 21 20 book does not represent the views of  
 22 21 the scientific community.  
 23 22 Q. My question was, do you  
 24 23 have a problem with a student reading  
 25 24 "Of Pandas And People"?

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1 00087  
 2 1 A. I probably have very little  
 3 2 problem with a student reading  
 4 3 virtually anything as long as it is  
 5 4 age appropriate, but we are way  
 6 5 outside of my field of science  
 7 6 education here. So you are asking my  
 8 7 personal opinion on what 15-year-old  
 9 8 children should read?  
 10 9 Q. Well, no. I'm asking,  
 11 10 first off, as a person who has  
 12 11 expertise in science education, is it  
 13 12 improper for a high school student to  
 14 13 read "Of Pandas And People"?  
 15 14 MR. WALCZAK: You are  
 16 15 not -- I'm going to object because  
 17 16 you are not giving any context to  
 18 17 this. I mean, just pick up and read  
 19 18 it on their own?  
 20 19 MR. WHITE: An objection is  
 21 20 not supposed to be argumentative or  
 22 21 not suggestive, so please keep it  
 23 22 within the federal rules.  
 24 23 BY MR. WHITE:  
 25 24 Q. What I'm asking you is, in

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1 00088  
 2 1 the context of high school education,  
 3 2 and based on your expertise as a  
 4 3 science educator, is it improper for  
 5 4 a student to go into the library of  
 6 5 the Dover High School and read "Of  
 7 6 Pandas And People"?  
 8 7 A. I think the student should  
 9 8 be able to choose -- when they walk  
 10 9 into their local high school library  
 11 10 to choose any book they wish to read.  
 12 11 Q. So, in other words, if a  
 13 12 student chooses to read "Of Pandas  
 14 13 And People," that would be fine, as  
 15 14 far as you are concerned?  
 16 15 A. If it is a book within the  
 17 16 school library, I feel any student  
 18 17 should have the right to read any  
 19 18 book within the school library.  
 20 19 Q. So if "Of Pandas And  
 21 20 People" is in the school library,  
 22 21 then you have no problem with a  
 23 22 student reading that book. Correct?  
 24 23 It's a yes or no.  
 25 24 A. I don't believe it's yes or



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SHEET 23 PAGE 89

1 00089  
 2 1 no. I believe there's a gradation.  
 3 2 If you are asking my  
 4 3 personal opinion, there are books I  
 5 4 would recommend the student to read,  
 6 5 and there are books that I would not  
 7 6 recommend the student to read, but I  
 8 7 believe, no matter what my  
 9 8 recommendation, that the student has  
 10 9 the right to read any book in their  
 11 10 public library, their school library.  
 12 11 Q. So in your expert opinion,  
 13 12 as a person with knowledge of science  
 14 13 education and pedagogy and  
 15 14 learning -- I would assume you have  
 16 15 expertise in scientific learning,  
 17 16 correct, and what's the best methods  
 18 17 of learning? Correct?  
 19 18 A. Correct.  
 20 19 Q. An education isn't just a  
 21 20 lock-step method, is it, with regard  
 22 21 to you only learn one thing and one  
 23 22 thing only? Right?  
 24 23 A. Correct.  
 25 24 Q. And in education people can

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1 00091  
 2 1 him answer it.  
 3 2 MR. WHITE: Then let her  
 4 3 repeat the question.  
 5 4 Please repeat the question.  
 6 5 (The court reporter read  
 7 6 back the following:  
 8 7 "Q. In your area of  
 9 8 expertise, then, what I'm asking, is  
 10 9 it proper or is it improper for a  
 11 10 high school student to read "Of  
 12 11 Pandas And People" as part of his  
 13 12 education in science?")  
 14 13 MR. WALCZAK: Because you  
 15 14 have changed it from can a student go  
 16 15 in and read whatever they want to is  
 17 16 it proper as part of their science  
 18 17 education.  
 19 18 MR. WHITE: Then you  
 20 19 understood the question --  
 21 20 MR. WALCZAK: Now I do. I  
 22 21 want to make sure that we are not  
 23 22 doing bait and switch here.  
 24 23 THE WITNESS: I hear the  
 25 24 words in the question "proper" and

PAGE 90

1 00090  
 2 1 consider various theories and compare  
 3 2 and contrast them with other  
 4 3 theories. Correct?  
 5 4 A. If you are asking me in my  
 6 5 realm of science education,  
 7 6 scientific theories to compare and  
 8 7 contrast, yes.  
 9 8 Q. In your area of expertise,  
 10 9 then, what I'm asking, is it proper  
 11 10 or is it improper for a high school  
 12 11 student to read "Of Pandas And  
 13 12 People" as part of his education in  
 14 13 science?  
 15 14 MR. WALCZAK: Wait a  
 16 15 minute. Now the facts here in your  
 17 16 question, the underlying facts and  
 18 17 premises, are changing.  
 19 18 MR. WHITE: If I am asking  
 20 19 questions, object properly. I don't  
 21 20 need a speech.  
 22 21 MR. WALCZAK: I'm objecting  
 23 22 because I don't understand the  
 24 23 question, and if I don't understand  
 25 24 the question, I'm not going to let

PAGE 92

1 00092  
 2 1 "science education." "Of Pandas" --  
 3 2 it's my opinion that the book "Of  
 4 3 Pandas And People" would be a poor  
 5 4 book for students to read to gain  
 6 5 proper science education in high  
 7 6 school.  
 8 7 BY MR. WHITE:  
 9 8 Q. Now, what if a student read  
 10 9 "Of Pandas And People" as part of his  
 11 10 education in high school, if it's  
 12 11 just one of many science books the  
 13 12 student is looking at?  
 14 13 A. The question is improper,  
 15 14 because I don't consider it a science  
 16 15 book.  
 17 16 Q. Okay. Of any book students  
 18 17 are reading that has something to do  
 19 18 with science.  
 20 19 A. For 15-year-old children in  
 21 20 public high schools, most are not  
 22 21 going to read many books, and  
 23 22 Pandas -- "Of Pandas And People"  
 24 23 would be down near the very bottom of  
 25 24 my recommendation of books to read at

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SHEET 24 PAGE 93

1 00093  
 2 1 that age for science education.  
 3 2 Q. And that's just your  
 4 3 opinion?  
 5 4 A. Correct.  
 6 5 Q. Now, what do you base that  
 7 6 opinion on with regard to "Of Pandas  
 8 7 And People"?  
 9 8 A. Sections that I have read  
 10 9 in "Of Pandas And People."  
 11 10 Q. But you said earlier that  
 12 11 it's been, what, about ten years or  
 13 12 so since you read the book from cover  
 14 13 to cover?  
 15 14 A. Cover to cover, yes, but  
 16 15 sections just recently.  
 17 16 Q. And what is your problem  
 18 17 with these sections you have read?  
 19 18 A. I don't have the book in  
 20 19 front of me to examine.  
 21 20 Q. I will show it to you.  
 22 21 MR. WHITE: I'm not going  
 23 22 to mark this as an exhibit, if that's  
 24 23 okay with you, Vic.  
 25 24 MR. WALCZAK: That's fine.

PAGE 94

1 00094  
 2 1 MR. WHITE: But this is the  
 3 2 second edition of "Of Pandas And  
 4 3 People" with the copyright of 1989  
 5 4 and 1993.  
 6 5 Off the record.  
 7 6 (Discussion off the  
 8 7 record.)  
 9 8 THE WITNESS: Page 99 and  
 10 9 100, it states, "Intelligent design  
 11 10 means that various forms of life  
 12 11 began abruptly through an intelligent  
 13 12 agency with their distinctive  
 14 13 features already intact, fish with  
 15 14 fins and scales, birds with feathers,  
 16 15 beaks and wings," et cetera.  
 17 16 I don't know of that view  
 18 17 existing in science education. I've  
 19 18 never seen it in high school biology  
 20 19 textbooks. I've never seen it in  
 21 20 college biology textbooks. I've  
 22 21 heard the national organizations in  
 23 22 education say that is improper, that  
 24 23 that is not science.  
 25 24 And I have read from the

PAGE 95

1 00095  
 2 1 national scientific associations that  
 3 2 that is not only science, they  
 4 3 consider it a discredited idea in  
 5 4 science, but yet it is being  
 6 5 presented here in this book as  
 7 6 science without any of the caveats,  
 8 7 without any of the objections below  
 9 8 that -- nowhere does it state this is  
 10 9 not science.  
 11 10 BY MR. WHITE:  
 12 11 Q. Now, along those lines,  
 13 12 then --  
 14 13 MR. WHITE: Well, let me  
 15 14 just -- just keep your thought. I  
 16 15 have a question here.  
 17 16 BY MR. WHITE:  
 18 17 Q. Along those lines, though,  
 19 18 where you are talking about Pages 99  
 20 19 and 100, about life forming abruptly,  
 21 20 if a student in the Dover High School  
 22 21 using the "Biology" book by Miller  
 23 22 and Levine being taught pursuant to  
 24 23 the state standards is taught the  
 25 24 theory of evolution, okay, what, as

PAGE 96

1 00096  
 2 1 far as the student's overall  
 3 2 education, is wrong with a student  
 4 3 reading about an alternative view to  
 5 4 that, which may run contrary to what  
 6 5 the student is being taught in the  
 7 6 classroom?  
 8 7 A. One, it is not a contrary  
 9 8 scientific view, as you state.  
 10 9 Second, within science  
 11 10 education it is not a goal to teach  
 12 11 students misconceptions. In fact, if  
 13 12 anything, we do our best not to  
 14 13 engender needless misconceptions, and  
 15 14 this is a needless misconception.  
 16 15 Q. Based on your view?  
 17 16 A. No. Based on my reading of  
 18 17 the National Association of Science  
 19 18 Teachers, based on the National  
 20 19 Association of Biology Teachers,  
 21 20 based on the National Academy of  
 22 21 Sciences, based on the American  
 23 22 Association for the Advancement of  
 24 23 Science, based on biology textbooks I  
 25 24 have read, biology textbooks I'm

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SHEET 25 PAGE 97

1 00097  
 2 1 familiar with at the college level,  
 3 2 at the high school level, scientists  
 4 3 I have spoken to personally, and  
 5 4 probably more, but I can't recall at  
 6 5 the moment.  
 7 6 Q. So, in other words,  
 8 7 students should not read about any  
 9 8 alternative views whether you agree  
 10 9 with those views or not?  
 11 10 A. I did not say that.  
 12 11 Q. Is it fine for a student to  
 13 12 read alternative views as far as a  
 14 13 student's education to, if anything,  
 15 14 solidify what the student learned,  
 16 15 because now the student can contrast  
 17 16 it to something that's different?  
 18 17 MR. WALCZAK: I'm going to  
 19 18 object.  
 20 19 THE WITNESS: You are going  
 21 20 to have to break that question down  
 22 21 for me.  
 23 22 MR. WALCZAK: Are you --  
 24 23 MR. WHITE: Let me ask him  
 25 24 a question.

PAGE 99

1 00099  
 2 1 read this book. Correct?  
 3 2 MR. WALCZAK: You know  
 4 3 what, because you keep jumping back  
 5 4 and forth here trying to get him to  
 6 5 say whether it's okay --  
 7 6 MR. WHITE: Object  
 8 7 properly, Vic.  
 9 8 MR. WALCZAK: Okay. No.  
 10 9 MR. WHITE: Just object.  
 11 10 If you don't like the question --  
 12 11 MR. WALCZAK: Okay. I'm  
 13 12 objecting, but your question is  
 14 13 unclear as to whether you are talking  
 15 14 about a student going on their own to  
 16 15 the library and taking out a book --  
 17 16 MR. WHITE: Well, I will  
 18 17 then clarify. Just object if it's  
 19 18 not clear.  
 20 19 MR. WALCZAK: -- or whether  
 21 20 a teacher should refer this book.  
 22 21 MR. WHITE: It's not --  
 23 22 MR. WALCZAK: Because your  
 24 23 questions aren't getting any clearer,  
 25 24 so if I don't explain it, you are not

PAGE 98

1 00098  
 2 1 BY MR. WHITE:  
 3 2 Q. What I'm asking for is, as  
 4 3 far as a student's education, overall  
 5 4 education, if a student is taught  
 6 5 something in the classroom, okay, and  
 7 6 then the student goes into the  
 8 7 library and takes a book off of a  
 9 8 shelf that may have a contrary view  
 10 9 of what the student just learned,  
 11 10 doesn't that comparing and  
 12 11 contrasting aid a student's  
 13 12 education?  
 14 13 MR. WALCZAK: I'm going to  
 15 14 object.  
 16 15 BY MR. WHITE:  
 17 16 Q. Answer the question.  
 18 17 A. The child would be  
 19 18 comparing and contrasting a science  
 20 19 view to a nonscience view. This book  
 21 20 does not bring that difference up to  
 22 21 the child; therefore, I would put it  
 23 22 at the bottom of books that I would  
 24 23 recommend for a child to read.  
 25 24 Q. But a child could still

PAGE 100

1 00100  
 2 1 going to know how to clarify the  
 3 2 question.  
 4 3 MR. WHITE: Well, give me a  
 5 4 chance, then. Okay?  
 6 5 MR. WALCZAK: Please.  
 7 6 BY MR. WHITE:  
 8 7 Q. What I'm asking is, if a  
 9 8 student on his own --  
 10 9 MR. WHITE: Is that fair,  
 11 10 Vic?  
 12 11 MR. WALCZAK: Thank you. I  
 13 12 appreciate the clarification.  
 14 13 BY MR. WHITE:  
 15 14 Q. -- on his own goes into the  
 16 15 library after having learned about  
 17 16 evolution in the classroom and reads,  
 18 17 for example, "Of Pandas And People"?  
 19 18 A. I think the child should  
 20 19 be -- have the right to read any book  
 21 20 in the public school library, and if  
 22 21 the child wishes to read about demons  
 23 22 causing disease in the public school  
 24 23 library, and there is a book on  
 25 24 demons causing disease in the public

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1 00101  
 2 1 school library and they heard about  
 3 2 germ theory in their biology class  
 4 3 and they want to compare demon  
 5 4 possession to germ theory, then of  
 6 5 course the child should have the  
 7 6 right to read any book in that public  
 8 7 library or school library.  
 9 8 Q. And that contributes to the  
 10 9 overall education of the child.  
 11 10 Correct?  
 12 11 A. It might engender  
 13 12 misconceptions about science and  
 14 13 actually be very detrimental to the  
 15 14 child's education.  
 16 15 Q. But that's a speculation on  
 17 16 your part?  
 18 17 A. 15-year-old children are  
 19 18 very susceptible to believing what's  
 20 19 in print.  
 21 20 Q. How do you know that?  
 22 21 A. Many studies have shown  
 23 22 that.  
 24 23 Q. Name a few.  
 25 24 A. I don't recall at the

PAGE 103

1 00103  
 2 1 A. To the extent at which how  
 3 2 difficult it is to extinguish  
 4 3 misconceptions with proper  
 5 4 conceptions of science, yes.  
 6 5 Q. Okay. But without that  
 7 6 qualification that you just made?  
 8 7 A. And what is the question  
 9 8 again; I'm sorry?  
 10 9 MR. WHITE: Could you  
 11 10 please repeat the question.  
 12 11 (The court reporter read  
 13 12 back the following:  
 14 13 "Q. So do you hold  
 15 14 yourself out as an expert in that  
 16 15 area?")  
 17 16 BY MR. WHITE:  
 18 17 Q. In the area of students  
 19 18 reaching misconceptions in science.  
 20 19 MR. WALCZAK: Your original  
 21 20 question was do you hold yourself out  
 22 21 as an expert in misperceptions, I  
 23 22 think.  
 24 23 BY MR. WHITE:  
 25 24 Q. Do you hold yourself out as

PAGE 102

1 00102  
 2 1 moment.  
 3 2 Q. Well, is that your opinion,  
 4 3 then?  
 5 4 A. No.  
 6 5 Q. So you don't have any  
 7 6 expertise in the area of what a  
 8 7 15-year-old understands or how a  
 9 8 15-year-old can reach misconceptions?  
 10 9 A. 15-year-olds can reach  
 11 10 misconceptions through many, many  
 12 11 different ways, part of them through  
 13 12 teaching misconceptions.  
 14 13 Q. But as far as what a  
 15 14 15-year-old -- how a 15-year-old  
 16 15 interprets something, do you have any  
 17 16 expertise on that?  
 18 17 A. I have no expertise on how  
 19 18 students interpret most areas of  
 20 19 nonscience.  
 21 20 Q. What about areas of  
 22 21 science?  
 23 22 A. To a little extent, yes.  
 24 23 Q. So do you hold yourself out  
 25 24 as an expert in that area?

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1 00104  
 2 1 an expert in misperceptions in  
 3 2 science as it goes to a 15-year-old?  
 4 3 A. Not in all areas of  
 5 4 science, no. I don't know anyone who  
 6 5 could be.  
 7 6 Q. But have you done any  
 8 7 studies in that area?  
 9 8 A. I have studied students'  
 10 9 misconceptions concerning evolution,  
 11 10 yes.  
 12 11 Q. Have you done any studies  
 13 12 as far as how students reach  
 14 13 misconceptions?  
 15 14 A. No.  
 16 15 MR. WHITE: Why don't we  
 17 16 take a break. We have been going  
 18 17 about 50 minutes. Another five, ten  
 19 18 minutes.  
 20 19 (Recess taken.)  
 21 20 BY MR. WHITE:  
 22 21 Q. Professor, what other  
 23 22 sections of that "Of Pandas And  
 24 23 People" book did you review?  
 25 24 A. I reviewed a section



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SHEET 27 PAGE 105

1 00105  
 2 1 starting on Page 153 titled A Note To  
 3 2 Teachers.  
 4 3 Q. Okay. And what is your  
 5 4 opinion about the note to teachers?  
 6 5 A. It's misleading to teachers  
 7 6 and students who may read this  
 8 7 section.  
 9 8 Q. How is it misleading?  
 10 9 A. It states on Page 153 that:  
 11 10 "Teachers can show their students the  
 12 11 rough and tumble of genuine  
 13 12 scientific debate." The sentence is  
 14 13 in context concerning intelligent  
 15 14 design versus evolution. There is no  
 16 15 genuine scientific debate in the  
 17 16 scientific community concerning  
 18 17 intelligent design, so I find this  
 19 18 misleading.  
 20 19 Q. Do scientists debate  
 21 20 intelligent design?  
 22 21 A. Do you want to go through  
 23 22 each section separately as I bring  
 24 23 something up? I don't mind either  
 25 24 way.

PAGE 107

1 00107  
 2 1 would be considered wrong.  
 3 2 Q. So when you are saying  
 4 3 there is no debate, you are talking  
 5 4 about within the scientific  
 6 5 organizations?  
 7 6 A. I have knowledge that there  
 8 7 are individual scientists who support  
 9 8 and try to push intelligent design as  
 10 9 being science. I am not a scientist,  
 11 10 but when I look to the leading  
 12 11 scientific organizations in this  
 13 12 country, they report that that  
 14 13 intelligent design that these  
 15 14 scientists are pushing is not  
 16 15 accepted by the scientific community,  
 17 16 that in fact it's rejected.  
 18 17 Q. So if individual scientists  
 19 18 are debating intelligent design, is  
 20 19 that, in your view, a meaningless  
 21 20 debate, if the leading organizations,  
 22 21 as you point out, don't debate it?  
 23 22 A. I'm not a scientist. I  
 24 23 can't adjudicate whether it's  
 25 24 meaningless or not; but for

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1 00106  
 2 1 Q. You just made this point,  
 3 2 so I want to before we forget. Do  
 4 3 scientists debate intelligent --  
 5 4 A. The leadership and the  
 6 5 representative organizations of  
 7 6 science have reported that it is not  
 8 7 science, that there is no body of  
 9 8 research in the relevant scientific  
 10 9 literature on intelligent design,  
 11 10 ergo they don't.  
 12 11 Q. So no scientists debate?  
 13 12 A. Oh, there might be  
 14 13 individual scientists. There are  
 15 14 individual scientists who debate that  
 16 15 humans and dinosaurs coexisted, that  
 17 16 the age of the earth is 6 or 10  
 18 17 thousand years old.  
 19 18 I have heard of some  
 20 19 scientists debating all sorts of  
 21 20 things that we consider  
 22 21 misconceptions within science; but if  
 23 22 a student were to answer that the  
 24 23 earth was 10,000 years old on a  
 25 24 standardized scientific exam, it

PAGE 108

1 00108  
 2 1 15-year-olds in high school, we teach  
 3 2 mainline accepted science in the  
 4 3 scientific community, not ideas that  
 5 4 have been rejected by the scientific  
 6 5 community.  
 7 6 Q. As far as you know, in the  
 8 7 Dover School District, the school  
 9 8 district is teaching evolution  
 10 9 pursuant to the Pennsylvania academic  
 11 10 standards. Correct?  
 12 11 A. This is a question  
 13 12 specifically about evolution?  
 14 13 Q. Uh-huh.  
 15 14 A. I did not compare the Dover  
 16 15 curriculum to the state curriculum,  
 17 16 so -- or state standards, so I'm not  
 18 17 sure.  
 19 18 Q. So you don't know?  
 20 19 A. I don't know.  
 21 20 Q. But as far as you know from  
 22 21 Exhibit 4, this statement that's read  
 23 22 to the students -- did I say 4 or 2;  
 24 23 I'm sorry?  
 25 24 A. You said 4.



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SHEET 28 PAGE 109

1 00109

2 1 Q. I'm sorry; 2. The

3 2 statement that is read to the

4 3 students is that Pennsylvania

5 4 academic standards require that

6 5 students learn about Darwin's theory

7 6 of evolution and take an exam on it.

8 7 That's at the bottom of the first

9 8 page. The first paragraph of the

10 9 statement read to students.

11 10 A. This is what it says here,

12 11 yes.

13 12 Q. So that's as far as you

14 13 know? You don't know anything

15 14 opposite of that, do you?

16 15 A. Correct.

17 16 Q. Now, if you turn the page

18 17 to the last paragraph of the

19 18 statement read to students is that:

20 19 "As a standards-driven district,

21 20 class instruction focuses upon

22 21 preparing students to achieve

23 22 proficiency on standards-based

24 23 assessments." Correct?

25 24 A. That's what it says here.

PAGE 110

1 00110

2 1 Q. Do you have any information

3 2 that would contradict that statement?

4 3 A. I do not.

5 4 Q. Are there any weaknesses in

6 5 Darwin's theory, that you are aware

7 6 of?

8 7 A. Are we still on this page?

9 8 Q. We'll come back to that.

10 9 We'll come back to that. I just had

11 10 a question about --

12 11 A. Could you restate the

13 12 question, please?

14 13 Q. Are there any weaknesses in

15 14 Darwin's theory that you are aware

16 15 of?

17 16 A. There's no evidence

18 17 refuting any part of evolution.

19 18 There are no evidence refuting the

20 19 occurrence of evolution. There is no

21 20 counterevidence to the occurrence of

22 21 evolution. However, there is

23 22 discussion in the scientific

24 23 community concerning the role of

25 24 various mechanisms within evolution.

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1 00111

2 1 I would not necessarily

3 2 refer to that as a weakness, but it's

4 3 a point at which consensus is not

5 4 arrived as far as the mechanisms of

6 5 evolution.

7 6 Q. So, in other words, there

8 7 is not evidence to support every

9 8 aspect of the theory, Darwin's

10 9 theory?

11 10 A. There are two parts to this

12 11 answer. The first part is the

13 12 occurrence of evolution. There is

14 13 overwhelming evidence to support the

15 14 occurrence of evolution as reported

16 15 by the scientific community.

17 16 The second part is

18 17 concerning the mechanisms, the how of

19 18 evolution. This is the part where

20 19 the members of the scientific

21 20 community still have not received --

22 21 come to a major consensus.

23 22 Q. The how of Darwin's theory,

24 23 isn't that also part of his theory?

25 24 A. Yes.

PAGE 112

1 00112

2 1 Q. So you said that there's

3 2 not evidence to support all of the

4 3 mechanisms or the how of evolution.

5 4 Correct?

6 5 A. This is what the scientific

7 6 community reports, yes.

8 7 Q. And the mechanisms of the

9 8 how is part of Darwin's theory.

10 9 Correct?

11 10 A. There is the occurrence and

12 11 there is the how. If you wish to

13 12 include those, as many people do,

14 13 into one type of concept, then, yes,

15 14 there's people who do.

16 15 And other people state that

17 16 there's the evolution that's

18 17 considered a fact because it's been

19 18 accepted by the scientific community

20 19 with no counterevidence, and then

21 20 there's the theoretical portion which

22 21 concerns the how. So, again, I'm not

23 22 a scientist, but this is what the

24 23 scientific community reports.

25 24 Q. So you have no position on

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1 00113  
 2 1 that?  
 3 2 MR. WALCZAK: I'm sorry;  
 4 3 position on what?  
 5 4 MR. WHITE: Position on --  
 6 5 he was saying that there is different  
 7 6 ways of looking at the theory.  
 8 7 THE WITNESS: I think both  
 9 8 positions are almost synonymous.  
 10 9 They state that evolution occurred  
 11 10 and that there has to be explanations  
 12 11 concerning that, and there are very  
 13 12 good explanations. The particulars  
 14 13 of how all the mechanisms come into  
 15 14 play is still being discussed.  
 16 15 BY MR. WHITE:  
 17 16 Q. But when you combine the  
 18 17 two, the occurrence of evolution and  
 19 18 the how of evolution, that is part  
 20 19 and parcel of Darwin's theory.  
 21 20 Correct?  
 22 21 A. One can say that  
 23 22 evolution -- the occurrence of  
 24 23 evolution was brought about before  
 25 24 Darwin's time.

PAGE 115

1 00115  
 2 1 of Darwin's theory that lack  
 3 2 evidence?  
 4 3 A. Again, the occurrence of  
 5 4 evolution has been supported by  
 6 5 overwhelming evidence and there is no  
 7 6 counterevidence that evolution has  
 8 7 occurred. As far as the how of  
 9 8 evolution, there are discussions  
 10 9 concerning how the mechanisms work to  
 11 10 run evolution.  
 12 11 Q. I will ask the question  
 13 12 again, because you are not answering  
 14 13 it.  
 15 14 A. I'm sorry. I'm trying.  
 16 15 Q. What I'm asking you is that  
 17 16 in your opinion, are there aspects of  
 18 17 Darwin's theory that lack evidence?  
 19 18 MR. WALCZAK: Darwin had a  
 20 19 bunch of theories. What theory are  
 21 20 you asking about?  
 22 21 BY MR. WHITE:  
 23 22 Q. Well, let me ask you.  
 24 23 Explain --  
 25 24 MR. WALCZAK: Well, now --

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1 00114  
 2 1 Q. So then is Darwin's theory  
 3 2 just the mechanism of evolution?  
 4 3 A. Darwin did many things, and  
 5 4 one of the things he did was  
 6 5 establish evidence for the occurrence  
 7 6 of evolution, and, most importantly,  
 8 7 one of the hows, natural selection.  
 9 8 Q. So are there aspects of the  
 10 9 theory, Darwin's theory, for which  
 11 10 there is no evidence to support it?  
 12 11 A. Every theory, every  
 13 12 scientific theory, cannot explain all  
 14 13 parts of what it's attempting to  
 15 14 explain.  
 16 15 Q. So that would include  
 17 16 Darwin's theory?  
 18 17 A. I'm still trying to answer  
 19 18 the question.  
 20 19 Q. I'm sorry.  
 21 20 A. There is no counterevidence  
 22 21 to the occurrence of evolution. More  
 23 22 evidence can always be supplied to  
 24 23 any theory, scientific theory.  
 25 24 Q. So then there are aspects

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1 00116  
 2 1 THE WITNESS: There's --  
 3 2 there's --  
 4 3 MR. WHITE: I'm asking the  
 5 4 professor. He is the one that you  
 6 5 guys are proffering as an expert in  
 7 6 science education, so I'm trying to  
 8 7 figure out --  
 9 8 MR. WALCZAK: But your  
 10 9 questions have to be clear.  
 11 10 MR. WHITE: Well.  
 12 11 THE WITNESS: Darwin put  
 13 12 forth evidence that evolution  
 14 13 occurred. To my knowledge, there is  
 15 14 no counterevidence to that. There's  
 16 15 overwhelming evidence for it. Any  
 17 16 theory can use more evidence. That's  
 18 17 a hallmark of science.  
 19 18 That's a hallmark of  
 20 19 science that we accept new evidence,  
 21 20 supporting, countersupporting,  
 22 21 whatever it may be, to something and  
 23 22 take it into consideration. So in  
 24 23 that context we will accept any  
 25 24 evidence, counterevidence, to the

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1 00117  
 2 1 occurrence of evolution that comes  
 3 2 in. But reported from the scientific  
 4 3 community, there is none.  
 5 4 Now, to the other area of  
 6 5 Darwin's theory, as you call it, the  
 7 6 how of Darwin's theory, this is where  
 8 7 because there's discussion, because  
 9 8 there's different interpretations of  
 10 9 evidence, that I imagine that some  
 11 10 evidence concerning certain  
 12 11 theoretical aspects still might be  
 13 12 wanting.  
 14 13 BY MR. WHITE:  
 15 14 Q. When you say "I imagine,"  
 16 15 why did you phrase it that way?  
 17 16 A. I'm not a scientist. I'm  
 18 17 not a research biologist in  
 19 18 evolutionary biology.  
 20 19 Q. Well, what is your  
 21 20 background with regard to evolution?  
 22 21 A. I've taken courses in  
 23 22 evolution. I've read books in  
 24 23 evolution. I've studied, to a  
 25 24 certain extent, how students learn

PAGE 118

1 00119  
 2 1 "Q. And these are what  
 3 2 level courses?  
 4 3 "A. Undergraduate.")  
 5 4 BY MR. WHITE:  
 6 5 Q. Now, you said to a certain  
 7 6 extent, you studied how students  
 8 7 learn about evolution?  
 9 8 A. Yes.  
 10 9 Q. Describe this extent that  
 11 10 you studied.  
 12 11 A. I've done quantitative and  
 13 12 qualitative studies concerning how  
 14 13 students come to understand various  
 15 14 aspects in evolution.  
 16 15 Q. Where have you done these  
 17 16 studies?  
 18 17 A. Primarily at McGill.  
 19 18 Q. How recently have you done  
 20 19 these studies?  
 21 20 A. We have studies going on  
 22 21 currently.  
 23 22 Q. Tell me about this  
 24 23 quantitative knowledge you have  
 25 24 acquired in this subject.

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1 00118  
 2 1 evolution.  
 3 2 Q. And what courses have you  
 4 3 taken in regard to evolution?  
 5 4 A. Evolution course,  
 6 5 population genetics, sat in on a  
 7 6 course at Harvard, I can't recall the  
 8 7 title of it, but it had to do with  
 9 8 evolution.  
 10 9 Q. And these are what level  
 11 10 courses?  
 12 11 A. Undergraduate.  
 13 12 MR. WALCZAK: Can we take a  
 14 13 two-minute break?  
 15 14 MR. WHITE: Sure.  
 16 15 (Recess taken.)  
 17 16 (The court reporter read  
 18 17 back the following:  
 19 18 "Q. And what courses have  
 20 19 you taken in regard to evolution?  
 21 20 "A. Evolution course,  
 22 21 population genetics, sat in on a  
 23 22 course at Harvard, I can't recall the  
 24 23 title of it, but it had to do with  
 25 24 evolution.

PAGE 120

1 00120  
 2 1 A. It's varied and long, and  
 3 2 I'd have to review a lot of documents  
 4 3 to come back to you with valid  
 5 4 answers. I can give you some  
 6 5 generalities.  
 7 6 Q. Sure.  
 8 7 A. That we find that students  
 9 8 with a religious background in  
 10 9 various areas, particularly  
 11 10 evangelical Christians, tend to have  
 12 11 more opposition to learning evolution  
 13 12 than those who are not evangelical  
 14 13 Christians or particularly have a  
 15 14 high religiosity index, for example.  
 16 15 Q. What about the qualitative  
 17 16 aspect of your research?  
 18 17 A. Well, we've interviewed,  
 19 18 and my people, doctoral students and  
 20 19 post doctoral students, have  
 21 20 interviewed many, many, many teachers  
 22 21 and students concerning evolution,  
 23 22 how they feel about it, how they  
 24 23 learn about it, how they balance  
 25 24 their religious beliefs with the

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SHEET 32 PAGE 125

1 00125

2 1 sentence states: "As students learn

3 2 to weigh and sort competing views and

4 3 become active participants in the

5 4 clash of ideas, you may be surprised

6 5 at the level of motivation and

7 6 achievement displayed by your

8 7 students."

9 8 My concern here is that in

10 9 a pedagogical sense I would say that

11 10 most of the motivation could be

12 11 caused by the students feeling that

13 12 their religious point of view is

14 13 being attacked, that intelligent

15 14 design is being set up as the

16 15 God-friendly point of view, or as

17 16 evolution, because it does not

18 17 mention God, as we had just

19 18 mentioned, is somehow Godless.

20 19 And here it states that by

21 20 comparing the two, that the teacher

22 21 may be surprised at the level of

23 22 motivation, implying motivation will

24 23 go up. I agree it might go up, but I

25 24 think for the wrong reasons.

PAGE 127

1 00127

2 1 community. It directly says that

3 2 there is impressive and consistent

4 3 evidence for intelligent design.

5 4 I don't disagree that the

6 5 authors of this textbook may think

7 6 that's the case, and there may be

8 7 some scientists who think that's the

9 8 case, but the leading organizations

10 9 have said there is no scientific

11 10 evidence in support of intelligent

12 11 design, and there is no body of

13 12 literature supporting that view in

14 13 the relevant scientific journals.

15 14 Q. If I can direct you back to

16 15 Exhibit 2, that's the press release

17 16 there.

18 17 A. Yes.

19 18 Q. You have it.

20 19 The statement regarding the

21 20 biology curriculum on Page 1. It's

22 21 the --

23 22 A. What paragraph?

24 23 Q. It's the first indented

25 24 paragraph.

PAGE 126

1 00126

2 1 Q. And, again, this is just

3 2 your speculations and your opinions

4 3 based upon the text of that book?

5 4 A. It's my opinion based on

6 5 interviewing over a thousand students

7 6 concerning various types of

8 7 creationism and evolution, reading

9 8 creationists' materials, reading

10 9 other people's studies.

11 10 Q. Anything else in that book

12 11 that you reviewed, "Of Pandas And

13 12 People"?

14 13 A. As I stated previously, I

15 14 read the Conclusion section, also.

16 15 The last sentence states that:

17 16 "However, without exaggeration, there

18 17 is impressive and consistent evidence

19 18 from each area we have studied for

20 19 the view that living things are the

21 20 product of intelligent design."

22 21 I think this is misleading

23 22 to students because this so-called

24 23 impressive and consistent evidence

25 24 has been rejected by the scientific

PAGE 128

1 00128

2 1 How do you read that

3 2 statement? Read that statement and

4 3 tell me what it means to you.

5 4 A. Okay. I read it. What do

6 5 you mean what it means to me?

7 6 Q. Tell me what that statement

8 7 means to you. What is it supposed to

9 8 accomplish?

10 9 A. Well, I don't know the

11 10 intent of the authors, but when I

12 11 read it, I see that students are

13 12 being told to look at some gaps, but

14 13 yet they are not disclosed, and some

15 14 problems, but yet are not disclosed,

16 15 and Darwin's theory, not evolution in

17 16 particular, and that evolution is

18 17 being singled out concerning gaps and

19 18 problems in its theory, as opposed to

20 19 all theories and science, a general

21 20 statement.

22 21 Therefore, to me, it says

23 22 that somehow evolution or at least

24 23 Darwin's theory is somehow inferior

25 24 science.



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SHEET 33 PAGE 129

1 00129  
 2 1 Q. Could you also read that  
 3 2 statement where it says: "Students  
 4 3 will be made aware of gaps, problems  
 5 4 in Darwin's theory and of other  
 6 5 theories of evolution." Did that  
 7 6 also mean they will be made aware of  
 8 7 gaps and problems in these other  
 9 8 theories of evolution?  
 10 9 A. I don't know other theories  
 11 10 of evolution.  
 12 11 Q. But can you read it where  
 13 12 it says "be made aware of gaps,  
 14 13 problems in Darwin's theory and of  
 15 14 other theories of evolution including  
 16 15 but not limited to intelligent  
 17 16 design," that they will be made aware  
 18 17 of any gaps and problems in, for  
 19 18 example, intelligent design?  
 20 19 A. What's the question?  
 21 20 Q. Can you read this statement  
 22 21 that way, as well?  
 23 22 MR. WALCZAK: Didn't you  
 24 23 just read it?  
 25 24 BY MR. WHITE:

PAGE 131

1 00131  
 2 1 A. The leading scientific  
 3 2 organizations and science education  
 4 3 organizations in the United States  
 5 4 have stated that intelligent design  
 6 5 is not science.  
 7 6 Q. So that's what you are  
 8 7 basing your assumptions on and your  
 9 8 opinions?  
 10 9 A. I'm basing my opinions on  
 11 10 all the reputable scientific  
 12 11 organizations that I'm aware of, the  
 13 12 leading ones in the United States.  
 14 13 Q. So the answer would be yes,  
 15 14 then?  
 16 15 A. Yes.  
 17 16 Q. Now, as far as you know,  
 18 17 Dover School District is teaching  
 19 18 high school biology pursuant to the  
 20 19 Pennsylvania Standards for Science  
 21 20 and Technology?  
 22 21 A. That's what I had read.  
 23 22 Q. And the Dover School  
 24 23 District is not teaching intelligent  
 25 24 design in its high school biology

PAGE 130

1 00130  
 2 1 Q. I said read it. Sorry.  
 3 2 Can you interpret it that way,  
 4 3 construe it that way, where the gaps,  
 5 4 problems doesn't just apply to  
 6 5 Darwin's theory, but it applies to  
 7 6 any of these other theories?  
 8 7 A. Yes. Then, when I read  
 9 8 that, what it means to me is that it  
 10 9 is conflating a scientific theory  
 11 10 with a nonscientific idea, a  
 12 11 nonscientific idea that has been  
 13 12 rejected by all major scientific  
 14 13 organizations in the United States.  
 15 14 Q. But that there might be  
 16 15 gaps and problems with these other  
 17 16 theories that the students would be  
 18 17 made aware of as well?  
 19 18 A. I have very little  
 20 19 knowledge of gaps and problems in  
 21 20 nonscientific ideas that pretend to  
 22 21 be scientific theories.  
 23 22 Q. You are working under the  
 24 23 assumption that these other theories  
 25 24 are not scientific. Correct?

PAGE 132

1 00132  
 2 1 courses?  
 3 2 A. I think they are.  
 4 3 Q. You think they are teaching  
 5 4 intelligent design?  
 6 5 A. Yes.  
 7 6 Q. Based upon what?  
 8 7 A. The statement that is read  
 9 8 to the students.  
 10 9 Q. So reading this  
 11 10 four-paragraph statement to the  
 12 11 students is teaching intelligent  
 13 12 design?  
 14 13 A. It's teaching about  
 15 14 intelligent design.  
 16 15 Q. How is that?  
 17 16 A. Paragraph 3 states,  
 18 17 quote --  
 19 18 Q. Paragraph 3 of what?  
 20 19 A. The statement that is read  
 21 20 to the students.  
 22 21 Q. Okay. Exhibit No. 2, okay.  
 23 22 A. Sorry. The third  
 24 23 paragraph: "Intelligent design is an  
 25 24 explanation of the origin of life

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SHEET 34 PAGE 133

1 00133  
 2 1 that differs from Darwin's view."  
 3 2 Q. Is --  
 4 3 A. Prior to the -- prior --  
 5 4 Q. Well, let me ask you that.  
 6 5 Is intelligent design --  
 7 6 A. I haven't finished my --  
 8 7 MR. WALCZAK: Yes, let him  
 9 8 finish the question.  
 10 9 THE WITNESS: -- my answer.  
 11 10 Prior to that, students  
 12 11 maybe haven't heard the word  
 13 12 "intelligent design," and now they  
 14 13 have learned that intelligent design  
 15 14 is an explanation of the origin of  
 16 15 life that differs from Darwin's view.  
 17 16 That is a form of teaching that  
 18 17 occurs in the classroom.  
 19 18 BY MR. WHITE:  
 20 19 Q. Is intelligent design an  
 21 20 explanation of the origin of life  
 22 21 that differs from Darwin's view, is  
 23 22 it an explanation?  
 24 23 A. I don't know Darwin's view  
 25 24 on the origin of life. I don't think

PAGE 135

1 00135  
 2 1 "This is a microscope," that is  
 3 2 teaching.  
 4 3 Q. So my question, then, is,  
 5 4 reading a statement that just says  
 6 5 "Intelligent design is an explanation  
 7 6 of the origin of life that differs  
 8 7 from Darwin's view," that's teaching  
 9 8 intelligent design in a biology  
 10 9 classroom?  
 11 10 A. It's teaching about  
 12 11 intelligent design. Prior to that,  
 13 12 many students in the class probably  
 14 13 had no idea of what the words  
 15 14 "intelligent design" meant or was,  
 16 15 and now they may be aware that it's  
 17 16 an explanation of the origin of life  
 18 17 that differs from Darwin's view,  
 19 18 according to this.  
 20 19 Q. So teaching could just be  
 21 20 one statement in the classroom?  
 22 21 A. Teaching is facilitating  
 23 22 learning. The students learned  
 24 23 something about intelligent design  
 25 24 when they heard this sentence read.

PAGE 134

1 00134  
 2 1 he ever touched upon it except for a  
 3 2 private letter to someone.  
 4 3 Q. But is intelligent design  
 5 4 an explanation that may differ from  
 6 5 Darwin?  
 7 6 A. You are asking me to tell  
 8 7 you what I think intelligent design  
 9 8 is?  
 10 9 Q. No. I'm just asking you,  
 11 10 is it an explanation? It says here  
 12 11 it is an explanation on Exhibit 2.  
 13 12 A. It may be a theological or  
 14 13 philosophical position that  
 15 14 masquerades as science and therefore  
 16 15 has a different explanation that is  
 17 16 nonscientific than Darwin's view.  
 18 17 Q. So the reading of the one  
 19 18 sentence, then, "Intelligent design  
 20 19 is an explanation of the origin of  
 21 20 life that differs from Darwin's  
 22 21 view," that's teaching students  
 23 22 intelligent design, in your opinion?  
 24 23 A. When teachers put up a  
 25 24 picture of a microscope and they say

PAGE 136

1 00136  
 2 1 Q. If the teacher says "It's  
 3 2 raining outside today," is she  
 4 3 teaching them about atmospheric  
 5 4 changes?  
 6 5 A. He or she is making the  
 7 6 students aware that precipitation is  
 8 7 coming down outside, and that is  
 9 8 facilitating some form of learning.  
 10 9 I'm not saying it's good teaching,  
 11 10 but it's teaching.  
 12 11 Q. So teaching could be any  
 13 12 statement made by a teacher, then, in  
 14 13 a classroom?  
 15 14 A. It comes back to the  
 16 15 definition of what teaching is.  
 17 16 There are many definitions of  
 18 17 teaching. I like the one that  
 19 18 teaching facilitates learning.  
 20 19 So if the teacher in the  
 21 20 act of teaching, in the role of  
 22 21 teaching or within the classroom is  
 23 22 trying to facilitate the learning of  
 24 23 a student and in this example trying  
 25 24 to facilitate what intelligent design

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1 00137  
 2 1 is, not only bringing up the name  
 3 2 intelligent design, but then  
 4 3 explaining what it is, is teaching.  
 5 4 Q. In that statement on  
 6 5 Exhibit 2, how is intelligent design  
 7 6 explained?  
 8 7 A. It states that intelligent  
 9 8 design is an explanation, is. What  
 10 9 is intelligent design? It is an  
 11 10 explanation of the origin of life  
 12 11 that differs from Darwin's view.  
 13 12 One, the students learn  
 14 13 that it's about origin of life. Two,  
 15 14 they learn that it differs from  
 16 15 Darwin's view; whether right or  
 17 16 wrong, that's another story.  
 18 17 Q. When you say "facilitate  
 19 18 learning," what do you mean by  
 20 19 "facilitate"?  
 21 20 A. Some statements could be  
 22 21 made that would not facilitate a  
 23 22 student learning. If there's not an  
 24 23 increase in understanding, then some  
 25 24 would contend teaching has not

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1 00138  
 2 1 occurred. If this statement is not  
 3 2 intended to increase students'  
 4 3 understanding, then why is it being  
 5 4 read to them?  
 6 5 It is being read to them to  
 7 6 increase their understanding about  
 8 7 intelligent design; therefore, it has  
 9 8 increased the student's understanding  
 10 9 on the subject in particular.  
 11 10 Q. In your expert report,  
 12 11 Exhibit 1, do you discuss the  
 13 12 concepts of teaching?  
 14 13 A. I don't believe so.  
 15 14 Q. In your expert report do  
 16 15 you give any definitions of teaching?  
 17 16 A. No.  
 18 17 Q. In your expert report,  
 19 18 Exhibit 1, do you give a definition  
 20 19 of what is good pedagogy?  
 21 20 A. I state that engendering  
 22 21 needless misconceptions is something  
 23 22 that virtually all science educators  
 24 23 trained in secular institutions would  
 25 24 probably agree with and certainly the

PAGE 139

1 00139  
 2 1 leadership in science education in  
 3 2 the United States would agree with.  
 4 3 Q. That's needless  
 5 4 misconceptions?  
 6 5 A. Correct.  
 7 6 Q. Can a teacher engender a  
 8 7 misconception and still be teaching  
 9 8 with good pedagogy?  
 10 9 A. Sometimes misconceptions  
 11 10 are engendered to help the student  
 12 11 understand something, and then at the  
 13 12 next level -- we find at a more  
 14 13 sophisticated level that the previous  
 15 14 conception that was taught wasn't  
 16 15 exactly accurate. So in that extent  
 17 16 it was a misconception that was  
 18 17 engendered for reasons of good  
 19 18 pedagogy, to learn something more  
 20 19 advanced.  
 21 20 Q. And that is up to the  
 22 21 teacher to make that determination?  
 23 22 A. Again, you are back to  
 24 23 legal aspects and contractual aspects  
 25 24 with teachers, but I would say in

PAGE 140

1 00140  
 2 1 general, not knowing the legalities  
 3 2 and so forth, teachers have a lot of  
 4 3 latitude concerning how they feel  
 5 4 their students learn best in their  
 6 5 community.  
 7 6 Q. I'm not talking legally.  
 8 7 I'm talking about teaching, good  
 9 8 teaching pedagogy. Making these  
 10 9 determinations of how to best teach a  
 11 10 student falls on the shoulder of the  
 12 11 individual teacher. Correct?  
 13 12 A. Most of the time, yes.  
 14 13 Q. And does it also fall on  
 15 14 the shoulder of the school district?  
 16 15 A. School district -- to my  
 17 16 knowledge -- and I have very little  
 18 17 knowledge of this -- school districts  
 19 18 don't usually tell teachers  
 20 19 particular aspects of how they should  
 21 20 go about teaching. It is more the  
 22 21 curriculum is, here is what needs to  
 23 22 be taught.  
 24 23 Here is maybe the type of  
 25 24 way we would like you to teach it, a

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1 00141  
 2 1 lecture or a lab, maybe the number of  
 3 2 days. Beyond that, the teacher has a  
 4 3 lot of latitude to use their  
 5 4 expertise.  
 6 5 Q. So the school district says  
 7 6 to the teacher "Here is the  
 8 7 curriculum," and then the teacher  
 9 8 determines how best to teach the  
 10 9 curriculum for the students?  
 11 10 A. To my knowledge, most of  
 12 11 the time that is the way I understand  
 13 12 it occurs, yes.  
 14 13 Q. Now, in the Dover School  
 15 14 District are students required to  
 16 15 review "Of Pandas And People"?  
 17 16 A. From my reading of this,  
 18 17 no.  
 19 18 Q. When you say "this," you're  
 20 19 talking about Exhibit 2?  
 21 20 A. The -- Exhibit 2, yes.  
 22 21 Q. And you had mentioned  
 23 22 earlier that your understanding was  
 24 23 that there was an opt-out provision  
 25 24 for students when this statement on

PAGE 143

1 00143  
 2 1 reasons.  
 3 2 Q. Do you know in general how  
 4 3 opt-out provisions work in public  
 5 4 schools?  
 6 5 A. No.  
 7 6 Q. Do you know how any opt-out  
 8 7 provision would work in the Dover  
 9 8 School District?  
 10 9 A. No.  
 11 10 Q. Do you have any research  
 12 11 you have conducted regarding peer  
 13 12 pressure on students as it relates to  
 14 13 opt-out provisions in public schools?  
 15 14 A. No.  
 16 15 Q. As far as you know, are  
 17 16 Dover students in any way rewarded or  
 18 17 punished academically by reviewing  
 19 18 "Of Pandas And People"?  
 20 19 A. No.  
 21 20 Q. If a student reads a  
 22 21 newspaper, any newspaper, the New  
 23 22 York Times, for example, and reads an  
 24 23 article about intelligent design,  
 25 24 okay, has the newspaper taught the

PAGE 142

1 00142  
 2 1 Exhibit 2 is read?  
 3 2 A. I read that in the letter  
 4 3 to the superintendent from, I  
 5 4 believe, some teachers.  
 6 5 Q. So you are aware that there  
 7 6 is an opt-out provision?  
 8 7 A. From my recollection. I  
 9 8 don't have the material in front of  
 10 9 me, but I believe the letter  
 11 10 suggested that the students had an  
 12 11 opt-out proviso.  
 13 12 Q. And so Dover students are  
 14 13 not required to learn about  
 15 14 intelligent design?  
 16 15 A. If the students are allowed  
 17 16 to leave the classroom during that  
 18 17 time of teaching intelligent design  
 19 18 in the classroom, then obviously they  
 20 19 are not learning about intelligent  
 21 20 design; however, there may be peer  
 22 21 pressure from other students to  
 23 22 remain in the classroom during that  
 24 23 time even though individual students  
 25 24 may wish to leave for whatever

PAGE 144

1 00144  
 2 1 student about intelligent design?  
 3 2 A. The student certainly may  
 4 3 have learned from reading from the  
 5 4 newspaper, but whether the act of  
 6 5 teaching has occurred -- under most  
 7 6 definitions of teaching that I'm  
 8 7 familiar with, the act of teaching  
 9 8 requires an actor, meaning the  
 10 9 teacher, to help facilitate the  
 11 10 student to learn, so in that case,  
 12 11 no.  
 13 12 Q. So a student reading is not  
 14 13 teaching -- reading a statement is  
 15 14 not -- he is not being taught  
 16 15 anything?  
 17 16 A. If somebody is reading that  
 18 17 statement to him, yes.  
 19 18 It would be the same as if  
 20 19 a teacher memorized the statement and  
 21 20 came in and said it, there wouldn't  
 22 21 be a difference, but the student  
 23 22 reading it in and of themselves, the  
 24 23 student may certainly still be  
 25 24 learning, of course we hope so; but



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SHEET 37 PAGE 145

1 00145

2 1 the act of teaching, under most

3 2 definitions that I'm familiar with, I

4 3 would not call that teaching.

5 4 Q. So I understand, then, so

6 5 if a teacher reads a one-sentence

7 6 statement to a student, that's

8 7 teaching, but if a student on his own

9 8 reads the same statement in a

10 9 newspaper, that's not teaching?

11 10 A. Correct. It is also the

12 11 context. One is reading a newspaper

13 12 and one is hearing the words from

14 13 their teacher in school.

15 14 Q. In the Dover School

16 15 District a student on his own

17 16 initiative can go into the library

18 17 and look at "Of Pandas And People."

19 18 Correct?

20 19 A. I don't know the policy at

21 20 Dover, but I would imagine that any

22 21 student can go in and look at any

23 22 book in Dover's library.

24 23 Q. I want to show you your CV.

25 24 I had received this separately from

PAGE 146

1 00146

2 1 your report, so I don't know if it

3 2 was originally attached to your

4 3 report.

5 4 MR. WHITE: If you can mark

6 5 that, please.

7 6 (Alters Exhibit 3 was

8 7 marked for identification.)

9 8 BY MR. WHITE:

10 9 Q. The Curriculum Vitae, is

11 10 that currently accurate, that you

12 11 have as Exhibit 3?

13 12 A. I received another funding

14 13 source in the last month or so.

15 14 Q. And what is that funding

16 15 source?

17 16 A. The federal government in

18 17 Canada.

19 18 Q. To do what?

20 19 A. Study evolution education

21 20 among Islamic students.

22 21 Q. Does that relate to the

23 22 studies you were talking about

24 23 previously?

25 24 A. Yes.

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1 00147

2 1 Q. Is there anything else

3 2 that's changed?

4 3 A. I believe I've been put on

5 4 another McGill committee membership,

6 5 but I can't recall what it's about,

7 6 but it certainly has nothing to do,

8 7 in my mind, with evolution education.

9 8 Q. Have you ever taught -- I'm

10 9 sorry; go ahead.

11 10 A. I think other than that, I

12 11 don't see any updates that have

13 12 occurred since this was sent.

14 13 Q. Have you ever taught

15 14 biology in a public high school?

16 15 A. No.

17 16 Q. For your Ph.D. in

18 17 education, what courses did you take

19 18 to teach you how to teach high school

20 19 teachers how to teach science?

21 20 A. I won't recall most of

22 21 them, but courses like teaching

23 22 methods, philosophy of education,

24 23 philosophy of science and science

25 24 education, a philosophy of science

PAGE 148

1 00148

2 1 course, a couple statistics courses,

3 2 qualitative research course. There

4 3 are a few others, but I can't recall

5 4 at this moment.

6 5 Q. What's the Evolution

7 6 Education Research Center that's

8 7 noted on Page 1 of Exhibit 3?

9 8 A. In 2001 McGill University

10 9 opened a center, which a center is a

11 10 term of art within the university,

12 11 meaning a recognized status of a

13 12 group of people deciding to do some

14 13 work together, and it was professors

15 14 from Harvard and professors from

16 15 McGill with various expertise that's

17 16 mentioned here on the CV.

18 17 Should I bring up things

19 18 that are on the CV or is that --

20 19 Q. Sure. If you can just tell

21 20 me who the four professors are from

22 21 Harvard and McGill.

23 22 A. When we opened, it was the

24 23 late Stephen J. Gould, Israel

25 24 Scheffler, Howard Gardner, Philip

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SHEET 38 PAGE 149

1 00149  
 2 1 Sadler.  
 3 2 Over to the McGill side?  
 4 3 Q. That was the Harvard side?  
 5 4 A. That was the Harvard side.  
 6 5 Q. The McGill side, the other  
 7 6 side of the border.  
 8 7 A. Yes. I covered the deep  
 9 8 South first.  
 10 9 You have myself, Joyce  
 11 10 Benenson, Mario Bunge, spelled  
 12 11 B-U-N-G-E, Graham Bell, Robert  
 13 12 Carroll, Bruce Trigger. That's it.  
 14 13 Q. And what's the mission of  
 15 14 the Evolution Education Research  
 16 15 Center?  
 17 16 A. Well, as it states here, to  
 18 17 advance the teaching and learning of  
 19 18 biological evolution through  
 20 19 research.  
 21 20 Q. When you say "through  
 22 21 research," what do you mean by  
 23 22 "research"?  
 24 23 A. Scholarly activities that  
 25 24 we hope will inform the

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1 00151  
 2 1 it is still fairly universally  
 3 2 accepted as the basic theory upon  
 4 3 which we derive our methods.  
 5 4 Q. Do you recall some of this  
 6 5 criticism, who has criticized  
 7 6 constructivism?  
 8 7 A. Not at the moment; I'm  
 9 8 sorry. But if it comes to me in the  
 10 9 remaining time of the deposition, I  
 11 10 will bring up the names.  
 12 11 Q. Sure.  
 13 12 Is part of the Evolution  
 14 13 Education Research Center to defend  
 15 14 the teaching of evolution in the high  
 16 15 school?  
 17 16 A. That's a very interesting  
 18 17 question. I think by our very  
 19 18 existence some of the things we talk  
 20 19 about, some of the things we do  
 21 20 performs that activity. It's not the  
 22 21 mission of the center, but it  
 23 22 certainly can be thought of as a side  
 24 23 issue from what we do, yes.  
 25 24 Q. Does the center, does it

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1 00150  
 2 1 practitioners, teachers, of ideas  
 3 2 that we have that may help them teach  
 4 3 evolution better.  
 5 4 Q. Now, is part of your  
 6 5 research to confirm theories about  
 7 6 teaching?  
 8 7 A. I don't think we've done  
 9 8 any studies to confirm any particular  
 10 9 theories about teaching. We've used  
 11 10 things such as constructivism, but I  
 12 11 don't think we did it for the purpose  
 13 12 of confirming or disconfirming  
 14 13 constructivism, for example.  
 15 14 Q. Is part of your research to  
 16 15 come up with any new methods of  
 17 16 teaching besides constructivism?  
 18 17 A. No.  
 19 18 Q. So is constructivism as a  
 20 19 theory, teaching science education,  
 21 20 is that an untouchable theory?  
 22 21 A. I don't think it's  
 23 22 untouchable. In fact, I have read  
 24 23 some criticism in the past of it.  
 25 24 However, I still -- from what I read,

PAGE 152

1 00152  
 2 1 release any -- does it have its own  
 3 2 publication?  
 4 3 A. No.  
 5 4 Q. So how is what you have  
 6 5 learned through your research, how is  
 7 6 that communicated to people in the  
 8 7 science-teaching community?  
 9 8 A. Through lectures of various  
 10 9 places from myself and others.  
 11 10 Sometimes writings of others will be  
 12 11 critiqued by us maybe to make it more  
 13 12 helpful, more understandable to  
 14 13 particular students. Occasionally we  
 15 14 review things for textbooks, for  
 16 15 example, or other books.  
 17 16 Occasionally things are sent to us to  
 18 17 review for publication in other  
 19 18 journals.  
 20 19 The people at the center  
 21 20 were helpful to me in helping in some  
 22 21 of the books concerning evolution,  
 23 22 teaching evolution, teaching biology,  
 24 23 teaching evolution in higher  
 25 24 education.

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1 00157  
 2 1 The probability is such that it is  
 3 2 something like 7 percent of all  
 4 3 submissions submitted are actually  
 5 4 going to print.  
 6 5 Now, I don't know if that  
 7 6 makes the peer review better or not.  
 8 7 I have no way of knowing that, but --  
 9 8 so I understand some might have a  
 10 9 more rigorous peer review just on the  
 11 10 acceptance rate, but I'm not sure if  
 12 11 there is a connection between  
 13 12 acceptance rate and quality of peer  
 14 13 review.  
 15 14 Q. In your area of expertise  
 16 15 of science education, what  
 17 16 publications do you have listed here  
 18 17 on your Curriculum Vitae have been  
 19 18 subjected to peer review, if you can  
 20 19 direct me to the page?  
 21 20 A. My -- sorry; Page 3.  
 22 21 Q. Page 3? And we're on --  
 23 22 and is this now -- is that Exhibit 3?  
 24 23 A. Okay. Under books,  
 25 24 "Biology: Understanding Life."

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1 00159  
 2 1 Q. How does a college level  
 3 2 biology textbook differ from, say, a  
 4 3 high school level biology textbook,  
 5 4 just in general?  
 6 5 A. If you were to open the  
 7 6 pages randomly, you would find that  
 8 7 the text would be denser, meaning  
 9 8 that there is more material within  
 10 9 the book. The concepts would  
 11 10 probably be explained in general at a  
 12 11 more sophisticated level. Most  
 13 12 likely there would be more concepts  
 14 13 covered in the textbook than the high  
 15 14 school textbook.  
 16 15 The university level  
 17 16 textbook would put more  
 18 17 responsibility to the student on  
 19 18 certain concepts to figure out more  
 20 19 about it on their own rather than a  
 21 20 high school book tends to do more of  
 22 21 the explaining work than the college  
 23 22 textbook does. The college text --  
 24 23 Q. Excuse me; it doesn't have  
 25 24 as many pictures?

PAGE 158

1 00158  
 2 1 Q. Okay. That was subjected  
 3 2 to peer review?  
 4 3 A. Yes.  
 5 4 Q. What was the process with  
 6 5 that peer review?  
 7 6 A. I believe the publisher  
 8 7 sent it out to close to maybe 200  
 9 8 reviewers.  
 10 9 Q. 200, did you say?  
 11 10 A. Yes.  
 12 11 Q. Because it's such a big  
 13 12 book, 800 pages, so, what, people  
 14 13 would just review different sections  
 15 14 of it?  
 16 15 A. Sometimes I was privy to  
 17 16 the reviews, other times I was not  
 18 17 privy to the reviews.  
 19 18 Q. And what is this book  
 20 19 about?  
 21 20 A. It is a textbook, college  
 22 21 level biology.  
 23 22 Q. College level biology  
 24 23 textbook?  
 25 24 A. Correct.

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1 00160  
 2 1 A. College textbooks sometimes  
 3 2 may have more pictures in the form of  
 4 3 graphs and charts, possibly, than the  
 5 4 high school does. The print may be  
 6 5 smaller.  
 7 6 Q. Well, I understand.  
 8 7 What other peer-review  
 9 8 publications?  
 10 9 A. Teaching --  
 11 10 Q. And -- excuse me -- so this  
 12 11 "Biology: Understanding Life," this  
 13 12 is a biology textbook or a textbook  
 14 13 on how to teach biology?  
 15 14 A. A textbook on biology.  
 16 15 Q. Who is the other Alters?  
 17 16 A. Sandra Alters.  
 18 17 Q. Who is that?  
 19 18 A. My wife.  
 20 19 Q. Now, your Ph.D. is in  
 21 20 education?  
 22 21 A. Correct.  
 23 22 Q. What is her background for  
 24 23 this book?  
 25 24 A. She also has a Ph.D. in

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1 00161  
 2 1 education.  
 3 2 Q. Two Ph.D.s in education  
 4 3 writing a book on the study of  
 5 4 biology?  
 6 5 A. Correct.  
 7 6 Q. So this is a biology  
 8 7 textbook, not a book on how to teach?  
 9 8 A. Correct.  
 10 9 Q. All right. What other  
 11 10 books do you have?  
 12 11 A. "Teaching Biology In Higher  
 13 12 Education."  
 14 13 Q. That's also peer reviewed?  
 15 14 A. Yes. Publishers -- in my  
 16 15 experience, publishers don't publish  
 17 16 my books, except for one, I believe,  
 18 17 without some form of peer review,  
 19 18 although that one may be, also.  
 20 19 The third book, "Teaching  
 21 20 Evolution In Higher Education:  
 22 21 Methodological Religious and  
 23 22 Nonreligious Issues." The same  
 24 23 thing.  
 25 24 Here's the questionable

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1 00163  
 2 1 listed under there would have been  
 3 2 subjected to peer review by whichever  
 4 3 publishing company published it?  
 5 4 A. Correct. Correct.  
 6 5 Q. Do you have any books or  
 7 6 publications that deal with what is  
 8 7 good pedagogy in high school biology  
 9 8 classes?  
 10 9 A. "Defending Evolution"  
 11 10 touches on that. It is not the point  
 12 11 of the entire book, but it does speak  
 13 12 to that issue briefly.  
 14 13 Q. What do you mean "briefly"?  
 15 14 What do you mean by that?  
 16 15 A. I don't have the book  
 17 16 memorized, but there are aspects  
 18 17 about teaching. I believe it's  
 19 18 Chapter 10.  
 20 19 Q. Anything else?  
 21 20 A. In the books?  
 22 21 Q. Yes. The books or your  
 23 22 refereed articles.  
 24 23 A. Specifically high school  
 25 24 level was the question?

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1 00162  
 2 1 one, "Project Collaboration: One  
 3 2 Large Experiment." I'm not sure if  
 4 3 the publisher sent this one out for  
 5 4 review or not. I edited this; I did  
 6 5 not author this, so I can't recall  
 7 6 the exact process.  
 8 7 The next one, "Defending  
 9 8 Evolution In The Classroom." That  
 10 9 was sent out for review and was  
 11 10 reviewed in various other places,  
 12 11 also.  
 13 12 Q. Now, "Defending Evolution  
 14 13 In The Classroom," is that geared  
 15 14 towards which classroom?  
 16 15 A. High school and college.  
 17 16 Q. Now, are there any articles  
 18 17 that you've written on the teaching  
 19 18 of science education that are also  
 20 19 peer reviewed? First, is that what  
 21 20 you mean by "refereed articles"?  
 22 21 A. Yes.  
 23 22 Q. So we don't need to go  
 24 23 through that.  
 25 24 But all the ones that are

PAGE 164

1 00164  
 2 1 Q. Uh-huh. Yes.  
 3 2 A. Well, many of them touch on  
 4 3 the issue. I'm trying to locate ones  
 5 4 that probably the majority would be  
 6 5 about it from the article. What is  
 7 6 creationism. It helps teachers  
 8 7 understand various types of  
 9 8 creationism for -- that they might  
 10 9 encounter when students ask questions  
 11 10 about it.  
 12 11 Possibly students'  
 13 12 religious beliefs in conflict with  
 14 13 science teaching. Possibly  
 15 14 "Evolution/Creationism: Students'  
 16 15 religious beliefs in conflict with  
 17 16 science teaching." Well, definitely  
 18 17 "Review of the creation controversy  
 19 18 and the science classroom."  
 20 19 Q. And we're still in the  
 21 20 section of the Refereed Articles?  
 22 21 A. Yes. Oh, did we move on?  
 23 22 Q. No, no, no. No, I was just  
 24 23 making sure I'm following you.  
 25 24 A. Probably a small amount in



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SHEET 42 PAGE 165

1 00165  
 2 1 concerns with teaching biological  
 3 2 evolution and theology in the United  
 4 3 States. "Reading stealth  
 5 4 antievolutionary delivery systems:  
 6 5 Possible effects on student science  
 7 6 learning." "Should student belief of  
 8 7 evolution be a goal?"  
 9 8 I can't recall about  
 10 9 "Hearts and minds in the science  
 11 10 classroom: The education of a  
 12 11 confirmed evolutionist revisited." I  
 13 12 can't recall what I wrote on that at  
 14 13 the moment.  
 15 14 Probably "Batty  
 16 15 Misconceptions," has some things  
 17 16 about learning about bats.  
 18 17 "Logarithmic paper and  
 19 18 misconceptions: A hidden linear  
 20 19 relationship." Maybe a little bit on  
 21 20 "Counseling physics students: A  
 22 21 research basis."  
 23 22 A position statement, that  
 24 23 touches on teaching. It's titled  
 25 24 "National Association of Biology

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1 00167  
 2 1 MR. WALCZAK: Wait. He's  
 3 2 still looking.  
 4 3 THE WITNESS: I'm still  
 5 4 looking.  
 6 5 MR. WHITE: I'm sorry.  
 7 6 THE WITNESS: I may have  
 8 7 mentioned it in "Teaching Biology In  
 9 8 Higher Education" and "Teaching  
 10 9 Evolution In Higher Education." At  
 11 10 this moment, that's all I remember.  
 12 11 BY MR. WHITE:  
 13 12 Q. Have you published any  
 14 13 articles or any publication regarding  
 15 14 learning abilities of high school  
 16 15 students with regard to science?  
 17 16 A. No.  
 18 17 Q. The article you wrote --  
 19 18 excuse me -- yes, the article, on  
 20 19 Page 3 of your CV, "Should student  
 21 20 belief of evolution be a goal?" as a  
 22 21 report from the National Center of  
 23 22 Science Education. Tell me about  
 24 23 that article.  
 25 24 A. The article's, to my

PAGE 166

1 00166  
 2 1 Teachers Position on Teaching  
 3 2 Evolution." "Modeling modes of  
 4 3 evolution: Comparing phyletic  
 5 4 gradualism and punctuated  
 6 5 equilibrium." And "Punctuated  
 7 6 Equilibrium: The missing link in  
 8 7 evolution education."  
 9 8 Should I continue on to  
 10 9 the --  
 11 10 Q. No. No. No. Thank you.  
 12 11 Have you written anything  
 13 12 about intelligent design or the  
 14 13 teaching of it?  
 15 14 A. I haven't written anything  
 16 15 for the teaching of intelligent  
 17 16 design.  
 18 17 Q. About the teaching?  
 19 18 A. About the teaching of  
 20 19 intelligent design. I've probably  
 21 20 touched on it in "Defending Evolution  
 22 21 In The Classroom." In fact, I know I  
 23 22 mentioned it in the book in a few  
 24 23 places.  
 25 24 Q. Have you done any research?

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1 00168  
 2 1 memory, which is, I think, fairly  
 3 2 good on the article, I was arguing  
 4 3 that belief as it's used in just  
 5 4 everyday language is the same as  
 6 5 accept or have a high level of  
 7 6 confidence in. Like, I believe we  
 8 7 will have lunch in a half an hour  
 9 8 from now. It is not a religious  
 10 9 statement; it is just how we use the  
 11 10 language, by and large.  
 12 11 So primarily the article  
 13 12 was about students should have good  
 14 13 reason to accept, to have a high  
 15 14 level of confidence in, to believe,  
 16 15 whichever word you want to use, that  
 17 16 evolution is the most accepted, for  
 18 17 good reasons, scientific explanation  
 19 18 of the diversity of life.  
 20 19 Q. So then the question you  
 21 20 pose there, "should student belief of  
 22 21 evolution be a goal," the answer  
 23 22 would be yes?  
 24 23 A. Yes.  
 25 24 Q. The next article on Page 4

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1 00169  
 2 1 of Exhibit 3, "Hearts and minds in  
 3 2 the science classroom: The education  
 4 3 of a confirmed evolutionist  
 5 4 revisited"?  
 6 5 A. Yes.  
 7 6 Q. Well, first off, who is the  
 8 7 confirmed evolutionist?  
 9 8 A. That was a review of an  
 10 9 article where I was writing about  
 11 10 somebody else's work, and I don't  
 12 11 recall it. If you have it with you,  
 13 12 I would be happy to look at it or  
 14 13 something. I don't recall enough to  
 15 14 comment.  
 16 15 Q. Do you recall anything  
 17 16 about the article?  
 18 17 A. It was probably written  
 19 18 nine years ago. Not at the moment.  
 20 19 Q. Okay. If you could turn to  
 21 20 Page 6 of your Exhibit 3 there.  
 22 21 About two-thirds of the way down, you  
 23 22 gave a presentation, and this is -- I  
 24 23 will count -- one, two, three, four,  
 25 24 five up from the bottom. Sorry; from

PAGE 171

1 00171  
 2 1 being invited to this presentation,  
 3 2 on faith and reason.  
 4 3 And the gist of the  
 5 4 article, if I may be so bold as to  
 6 5 paraphrase the Pope, was that  
 7 6 evolution has a lot of evidence and  
 8 7 that the Catholic church is not  
 9 8 taking a stand against it.  
 10 9 MR. WHITE: Want to break  
 11 10 for lunch now?  
 12 11 MR. WALCZAK: It's your  
 13 12 deposition.  
 14 13 MR. WHITE: Why don't we do  
 15 14 that.  
 16 15 MR. WALCZAK: That's fine.  
 17 16 (Thereupon, at 12:11 p.m. a  
 18 17 luncheon recess was taken until  
 19 18 1:10 p.m., at which time the  
 20 19 following proceedings were had:)  
 21 20 BY MR. WHITE:  
 22 21 Q. From your understanding,  
 23 22 are all evolutionary processes fully  
 24 23 understood?  
 25 24 A. No.

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1 00170  
 2 1 the bottom.  
 3 2 A. Yes.  
 4 3 Q. "Evolution, Catholicism,  
 5 4 and Protestantism," Riverside  
 6 5 Catholic Centre, Opus Dei, Montreal.  
 7 6 A. Yes. Yes.  
 8 7 Q. What is Opus Dei?  
 9 8 A. From my recollection, I was  
 10 9 invited to give a talk on evolution  
 11 10 and Catholicism, what the Catholic  
 12 11 position -- the Pope's position, the  
 13 12 Vatican's position, is on evolution.  
 14 13 Q. Who is Opus Dei, O-P-U-S,  
 15 14 D-E-I? Is that the group that  
 16 15 invited you?  
 17 16 A. Yes.  
 18 17 Q. What is the Catholic  
 19 18 position with regard to evolution?  
 20 19 A. Well, I'm not pretending to  
 21 20 be a Catholic scholar here. I'm not  
 22 21 sure it is the Catholic position  
 23 22 universal, but the Pope wrote an  
 24 23 encyclical that I read for this  
 25 24 presentation, and had read before

PAGE 172

1 00172  
 2 1 Q. When it comes to education,  
 3 2 science education, what is critical  
 4 3 thinking?  
 5 4 A. I've seen many different  
 6 5 definitions of critical thinking, but  
 7 6 from my perspective, it's being able  
 8 7 to take a proposition, a concept, an  
 9 8 idea, and being able to look at it  
 10 9 from different points of view that  
 11 10 would be appropriate within that  
 12 11 particular domain that that concept  
 13 12 lies.  
 14 13 Q. Does it include a process  
 15 14 of logic?  
 16 15 A. Yes.  
 17 16 Q. Does it include inferences?  
 18 17 A. Yes.  
 19 18 Q. Analysis?  
 20 19 A. Yes.  
 21 20 Q. Observation?  
 22 21 A. Yes.  
 23 22 Q. Problem solving?  
 24 23 A. Yes.  
 25 24 Q. Does it often lead to

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1 00173  
 2 1 recognition of new ideas?  
 3 2 A. Are we talking about new  
 4 3 ideas being realized within the  
 5 4 science classroom in a high school?  
 6 5 I need the context.  
 7 6 Q. Okay. First off,  
 8 7 generally, critical thinking, does it  
 9 8 lead to recognition of new ideas?  
 10 9 A. Well, this would be outside  
 11 10 of my area of expertise if we are  
 12 11 just talking in general life, but I  
 13 12 suppose so.  
 14 13 Q. Okay. What about in a  
 15 14 science classroom?  
 16 15 A. I'm sure students come up  
 17 16 with a lot of ideas, many of which  
 18 17 may be misconceptions, yes.  
 19 18 Q. Sometimes they are not  
 20 19 misconceptions, though. Correct?  
 21 20 A. I haven't heard of  
 22 21 personally a student coming up with a  
 23 22 new form of scientific insight that  
 24 23 then a scientist takes and publishes  
 25 24 significantly in scientific journals.

PAGE 174

1 00174  
 2 1 Q. But can it happen?  
 3 2 A. In principle, I imagine the  
 4 3 student would come up with the idea  
 5 4 and then go to the relevant  
 6 5 scientist, tell them about his or her  
 7 6 idea.  
 8 7 Then I imagine they would  
 9 8 go through their process, whatever it  
 10 9 may be in their particular  
 11 10 subdiscipline, and then I would  
 12 11 imagine they would put it forward to  
 13 12 the scientific community in the form  
 14 13 of journals and conferences and so  
 15 14 forth, and then I guess it would --  
 16 15 if it was appropriate for them, to  
 17 16 gain general agreement.  
 18 17 Q. But besides going through  
 19 18 all of those steps, can a student  
 20 19 through critical thinking just come  
 21 20 up with a recognition of a new  
 22 21 concept or a new idea?  
 23 22 A. I suppose so.  
 24 23 Q. Does critical thinking also  
 25 24 lead to recognition of new problems

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1 00175  
 2 1 in the science classroom?  
 3 2 A. Possibly.  
 4 3 Q. Is a part of critical  
 5 4 thinking to question fundamental  
 6 5 theories?  
 7 6 A. I think critical thinking  
 8 7 can be applied to all areas of  
 9 8 science.  
 10 9 Q. Does that include  
 11 10 questioning fundamental theories in  
 12 11 science?  
 13 12 A. Yes.  
 14 13 Q. As a person with expertise  
 15 14 in the area of science education,  
 16 15 what is the purpose of science  
 17 16 education in a high school?  
 18 17 A. I think you'd get different  
 19 18 answers depending on who you ask,  
 20 19 but, in general, my --  
 21 20 Q. I'm asking you.  
 22 21 A. In general, my opinion  
 23 22 would be to increase knowledge and  
 24 23 understanding of the process of  
 25 24 science. I think that's sufficient.

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1 00176  
 2 1 Q. And what is the process of  
 3 2 science?  
 4 3 A. How various areas of  
 5 4 science go about doing their work. I  
 6 5 think most immediately of something  
 7 6 we refer to as methodological  
 8 7 naturalism.  
 9 8 Q. What is that?  
 10 9 A. It means that a scientist  
 11 10 looks for natural causes of natural  
 12 11 phenomena in his or her work.  
 13 12 Q. And that's the purpose of  
 14 13 science education in a high school?  
 15 14 A. No. That's one of the  
 16 15 processes of science, if you will, or  
 17 16 one of the characteristics of science  
 18 17 that would be appropriate to teach in  
 19 18 high school.  
 20 19 Q. Are there any goals in the  
 21 20 teaching of science in high school  
 22 21 that differ from the purpose of  
 23 22 teaching science in high school?  
 24 23 A. I'm sorry, I don't  
 25 24 understand.

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1 00177  
 2 1 Q. Well, you said the purpose  
 3 2 of teaching science in high school --  
 4 3 MR. WALCZAK: You asked the  
 5 4 purpose, so he was answering the  
 6 5 purpose.  
 7 6 MR. WHITE: Right. No, no.  
 8 7 He had just said that it was  
 9 8 increased knowledge and understanding  
 10 9 in science. Correct?  
 11 10 MR. WALCZAK: And I'm  
 12 11 saying --  
 13 12 BY MR. WHITE:  
 14 13 Q. Now, what I'm asking you,  
 15 14 is there anything that would be a  
 16 15 goal in science education in high  
 17 16 school that might be different from a  
 18 17 purpose in science education?  
 19 18 A. Well, I think in all areas  
 20 19 of education, high school education,  
 21 20 including science, there are various  
 22 21 goals to improve students' logic,  
 23 22 critical thinking, ability to  
 24 23 discuss, write about. I think there  
 25 24 would be a long list.

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1 00179  
 2 1 school science classroom, is the  
 3 2 providing of information the same as  
 4 3 teaching?  
 5 4 A. It is a part of teaching.  
 6 5 Q. Explain that, please.  
 7 6 A. The microscope itself isn't  
 8 7 teaching, but handing it to the  
 9 8 students is a part of being able to  
 10 9 teach how to use a microscope and  
 11 10 what to see through the microscope.  
 12 11 Part of teaching is referring  
 13 12 students to the proper pages,  
 14 13 chapter, et cetera, that may help  
 15 14 them in learning when the teacher is  
 16 15 doing the action of teaching.  
 17 16 Q. So when you say handing  
 18 17 them a microscope, so a teacher hands  
 19 18 a microscope to a student, just hands  
 20 19 it to him, is that teaching?  
 21 20 A. It's a part of teaching.  
 22 21 It would be tough to continue the  
 23 22 teaching to say "Look at this slide"  
 24 23 without first having provided the  
 25 24 microscope and how to use the

PAGE 178

1 00178  
 2 1 Q. Is one of the purposes,  
 3 2 from the perspective of a teacher and  
 4 3 the perspective of a school district  
 5 4 that wants to educate students in  
 6 5 high school, purpose in science  
 7 6 education to make the science class  
 8 7 more interesting for the students?  
 9 8 A. I would hope so.  
 10 9 Q. More compelling for  
 11 10 students?  
 12 11 A. I would hope so.  
 13 12 Q. Is it a place in the  
 14 13 science classroom to discuss current  
 15 14 ideas as it relates to science?  
 16 15 A. I would hope so, as long as  
 17 16 they're appropriate.  
 18 17 Q. You were going to continue?  
 19 18 Okay.  
 20 19 Should education in the  
 21 20 science classroom in a public high  
 22 21 school encourage critical thinking?  
 23 22 A. Yes.  
 24 23 Q. Is the providing of  
 25 24 information in a classroom, in a high

PAGE 180

1 00180  
 2 1 microscope to the student.  
 3 2 Q. So besides handing the  
 4 3 microscope to the student, the  
 5 4 teacher would have to explain how to  
 6 5 use the microscope for it to be  
 7 6 teaching?  
 8 7 A. It would be difficult for  
 9 8 the teacher to explain how to use the  
 10 9 microscope as well without handing  
 11 10 the microscope to the student first.  
 12 11 Q. But the teacher would have  
 13 12 to explain how to use the microscope  
 14 13 to the student. Correct?  
 15 14 A. Yes. Generally, the  
 16 15 teacher might say "Rotate this knob  
 17 16 down to the lowest part. Don't go  
 18 17 through the slide. Notice that the  
 19 18 lens could possibly go through the  
 20 19 slide; don't allow that. Now move it  
 21 20 back the other way until it becomes  
 22 21 in focus with the glass level," et  
 23 22 cetera.  
 24 23 Q. So to do that, the teacher  
 25 24 has to do more than just hand the



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1 00181  
 2 1 microscope to the student. Correct?  
 3 2 A. What's "that"?  
 4 3 Q. To explain all these  
 5 4 functions of the microscope and how  
 6 5 to use it, it requires more action by  
 7 6 the teacher than just simply handing  
 8 7 the microscope to the student.  
 9 8 A. It's a part of teaching.  
 10 9 Without handing the microscope to the  
 11 10 students, they couldn't continue with  
 12 11 that next portion.  
 13 12 Q. But my point being is that  
 14 13 to fully teach the student, the  
 15 14 teacher has to explain how to use the  
 16 15 microscope?  
 17 16 MR. WALCZAK: You just  
 18 17 changed definitions. You started to  
 19 18 ask whether it's teach and now you  
 20 19 are saying "fully teach."  
 21 20 BY MR. WHITE:  
 22 21 Q. Answer the question.  
 23 22 A. Can you repeat it one more  
 24 23 time?  
 25 24 Q. To teach the student, the

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1 00183  
 2 1 the two.  
 3 2 Q. Do other people with your  
 4 3 expertise in science education  
 5 4 separate the two?  
 6 5 A. Many do.  
 7 6 Q. And why would they separate  
 8 7 the two?  
 9 8 A. Some claim that instruction  
 10 9 is simply saying what they should do  
 11 10 next, such as put so many milliliters  
 12 11 of this chemical into that beaker,  
 13 12 whereas I think there are still  
 14 13 things to be learned, even when one  
 15 14 is being instructed in that setting,  
 16 15 from it, but I still consider that to  
 17 16 be teaching, but others disagree with  
 18 17 me on that.  
 19 18 Q. So that's why you combined  
 20 19 the two, teaching and instruction?  
 21 20 A. I think that action of  
 22 21 so-called instruction is still  
 23 22 facilitating learning. It is part of  
 24 23 what's facilitating learning during  
 25 24 that class session.

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1 00182  
 2 1 teacher has to hand the microscope to  
 3 2 the student and also explain how to  
 4 3 use the microscope. Correct?  
 5 4 A. If one hands a microscope  
 6 5 to a student, that, in part, is a  
 7 6 part of teaching. The student now  
 8 7 realizes how heavy the microscope is,  
 9 8 how it feels. It's a kinesthetic  
 10 9 type of teaching experience at that  
 11 10 moment.  
 12 11 Q. Well, my question was, to  
 13 12 teach the student so the student  
 14 13 understands how to use the  
 15 14 microscope, you would have to hand  
 16 15 the microscope to the student and  
 17 16 then explain to the student how to  
 18 17 use the microscope. Correct?  
 19 18 A. Yes. The simple act of  
 20 19 handing the microscope to the student  
 21 20 is not instruction on how to use the  
 22 21 microscope, correct.  
 23 22 Q. Well, how is teaching  
 24 23 different from instruction?  
 25 24 A. I don't generally separate

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1 00184  
 2 1 Q. Now, would you say your  
 3 2 view on teaching, is that the  
 4 3 predominant view of teaching in the  
 5 4 academic community of science  
 6 5 educators?  
 7 6 A. Which view is that?  
 8 7 Q. Your view that it is just a  
 9 8 simple facilitation of knowledge.  
 10 9 A. A facilitation of learning.  
 11 10 I would think there is a far and wide  
 12 11 amount of definitions for teaching.  
 13 12 Q. So, in other words, yours  
 14 13 is or is not the predominant view?  
 15 14 A. I don't know whether it is  
 16 15 or isn't, but my educated guess would  
 17 16 be that facilitating learning would  
 18 17 be part of virtually everyone's  
 19 18 definition.  
 20 19 Q. And besides an educated  
 21 20 guess, would that be your opinion?  
 22 21 A. To the best of my  
 23 22 knowledge, yes.  
 24 23 Q. So if I understand, then,  
 25 24 so for someone to teach, they just

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1 00185  
 2 1 have to facilitate learning?  
 3 2 A. I don't know if it would  
 4 3 apply to all areas. I haven't tried  
 5 4 that. I'm not an expert in that  
 6 5 area. But within the realm of a high  
 7 6 school science classroom, when a  
 8 7 teacher facilitates learning, that's  
 9 8 generally considered teaching, in my  
 10 9 book.  
 11 10 Q. So, in other words, in a  
 12 11 science high school classroom,  
 13 12 anything that a teacher does to  
 14 13 facilitate learning is teaching?  
 15 14 A. Yes.  
 16 15 Q. In a science high school  
 17 16 classroom, how are students taught to  
 18 17 think critically?  
 19 18 A. I imagine there are  
 20 19 thousands of ways.  
 21 20 Q. Well, which ones do you  
 22 21 recommend as the best ways?  
 23 22 A. I'm not an expert on  
 24 23 critical thinking; however, what I  
 25 24 have read from people who do research

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1 00187  
 2 1 his or her students how to think  
 3 2 critically?  
 4 3 A. Yes.  
 5 4 Q. Is the purpose of science  
 6 5 education in a high school to train  
 7 6 future scientists?  
 8 7 A. Not specifically, no.  
 9 8 Q. What is a fact in science,  
 10 9 if you know?  
 11 10 A. According to the National  
 12 11 Academy of Science, a fact is an  
 13 12 observation, and something can also  
 14 13 be factual in its overwhelming  
 15 14 acceptance within the scientific  
 16 15 community.  
 17 16 Q. Is that your definition of  
 18 17 a fact in science?  
 19 18 A. I don't have my own  
 20 19 definition.  
 21 20 Q. What is a hypothesis in  
 22 21 science?  
 23 22 A. Hypothesis is generally  
 24 23 considered some form of testable idea  
 25 24 in science.

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1 00186  
 2 1 in critical thinking is to compare  
 3 2 equivalent ideas, scientific ideas,  
 4 3 compare them with the evidence,  
 5 4 compare misconceptions sometimes with  
 6 5 the evidence.  
 7 6 Q. But if you are an expert in  
 8 7 the area of science education,  
 9 8 wouldn't you also need to have  
 10 9 expertise in critical thinking, how  
 11 10 to teach critical thinking?  
 12 11 A. To a certain extent I have  
 13 12 some expertise in how to teach  
 14 13 critical thinking.  
 15 14 Q. Isn't one of the hallmarks  
 16 15 of a good scientist the ability to  
 17 16 think critically?  
 18 17 A. I'm not an expert on what a  
 19 18 hallmark of a leading scientist or a  
 20 19 good scientist would be, but I do  
 21 20 understand that is an attribute which  
 22 21 scientists report as being good.  
 23 22 Q. Okay. Is it the good  
 24 23 hallmark of a teacher in a science  
 25 24 classroom in a high school to teach

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1 00188  
 2 1 Q. Can you give me an example  
 3 2 in science of a hypothesis?  
 4 3 A. Dinosaurs and humans  
 5 4 coexisted.  
 6 5 Q. And what would be a  
 7 6 scientific fact, as an example?  
 8 7 A. Two spheres, same size,  
 9 8 different weight, fall at the same  
 10 9 rate on earth.  
 11 10 Q. Would a scientific fact be  
 12 11 the same as what you were talking  
 13 12 about earlier today, a scientific  
 14 13 law?  
 15 14 A. No. There can be factual  
 16 15 theories and there can be factual  
 17 16 laws.  
 18 17 Q. An example of a scientific  
 19 18 law would be gravity?  
 20 19 A. Okay.  
 21 20 Q. Is that correct? That's  
 22 21 what you said earlier.  
 23 22 A. Gravity is a theory and a  
 24 23 law. There is the law part of  
 25 24 gravity that is the description of

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1 00189  
 2 1 how gravity works, and then there is  
 3 2 the theoretical part, which is how  
 4 3 does that work.  
 5 4 Q. Now, in science, what is a  
 6 5 theory?  
 7 6 A. A theory is an explanation  
 8 7 of a natural phenomenon.  
 9 8 Q. Would a scientific theory  
 10 9 be a scientific explanation of  
 11 10 well-established observations?  
 12 11 A. Could you repeat that,  
 13 12 please?  
 14 13 Q. Would a theory be a  
 15 14 scientific explanation of  
 16 15 well-established observations?  
 17 16 A. It could be, yes.  
 18 17 Q. Could a theory also be  
 19 18 defined as a well-tested explanation  
 20 19 that unifies a broad range of  
 21 20 observations?  
 22 21 A. I hate to ask, but could  
 23 22 you repeat it?  
 24 23 Q. Sure. A well-tested  
 25 24 explanation that unifies a broad

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1 00190  
 2 1 range of observations?  
 3 2 A. I don't see a problem with  
 4 3 that.  
 5 4 Q. So that could be a  
 6 5 definition of it, of theory?  
 7 6 A. I think it could be part of  
 8 7 a definition. I wouldn't accept that  
 9 8 to be the entire definition of  
 10 9 theory.  
 11 10 Q. What more would be needed  
 12 11 for the definition to satisfy you?  
 13 12 A. Natural phenomena.  
 14 13 Q. In science, can a theory be  
 15 14 modified?  
 16 15 A. Sure.  
 17 16 Q. Can it be expanded?  
 18 17 A. Yes.  
 19 18 Q. Generalized?  
 20 19 A. I think so.  
 21 20 Q. Can it be discarded?  
 22 21 A. Yes.  
 23 22 Q. Disaffirmed?  
 24 23 A. I don't know with that  
 25 24 language. I haven't heard it -- that

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1 00191  
 2 1 language used concerning theories.  
 3 2 Maybe.  
 4 3 Q. Can it be incorporated into  
 5 4 a broader theory?  
 6 5 A. I believe so.  
 7 6 Q. In learning about theories,  
 8 7 should students in high school keep  
 9 8 an open mind, in science classes?  
 10 9 A. Students should always keep  
 11 10 an open mind in high school science  
 12 11 classes, and I'm not quite sure what  
 13 12 the term means, "open mind," but I  
 14 13 can guess.  
 15 14 Q. Well, what do you think the  
 16 15 word or term "open mind" means?  
 17 16 A. I wouldn't use the term  
 18 17 "open mind"; but if I had to take a  
 19 18 guess on what you mean by it, I would  
 20 19 think that if they heard something at  
 21 20 home or in other areas, came into the  
 22 21 classroom, and then they hear  
 23 22 something different, that they would  
 24 23 look at the evidence and keep an open  
 25 24 mind to what they previously thought

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1 00192  
 2 1 was accurate compared to what they  
 3 2 are learning now, and examine what  
 4 3 they are learning now compared to  
 5 4 other experiences.  
 6 5 Q. But when a student is  
 7 6 studying a theory in science class,  
 8 7 should the student accept that  
 9 8 theory?  
 10 9 A. I think the action is on  
 11 10 the teacher to show the evidence for  
 12 11 the theory so that the student will  
 13 12 understand why that particular theory  
 14 13 is accepted in the scientific  
 15 14 community.  
 16 15 Q. Is it the responsibility of  
 17 16 a teacher in a public high school  
 18 17 science class to teach a student to  
 19 18 accept a theory in science?  
 20 19 A. I think if a student at the  
 21 20 end of a course thinks that when you  
 22 21 drop a sphere of metal it goes up  
 23 22 into the air and doesn't follow the  
 24 23 law of gravity, that there is more  
 25 24 work for the teacher to do.

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1 00193  
 2 1 The teacher will probably  
 3 2 modify their teaching such that the  
 4 3 student will begin to understand how  
 5 4 the law of gravity works for the  
 6 5 objects and expunge the  
 7 6 misconception.  
 8 7 Q. But in teaching theories in  
 9 8 a public high school science  
 10 9 classroom, should a teacher encourage  
 11 10 a student or students to view a  
 12 11 scientific theory critically?  
 13 12 A. I think all things in  
 14 13 science should be looked at  
 15 14 critically.  
 16 15 Q. Now, when a student is  
 17 16 taught a theory in science, how far  
 18 17 does the teacher or should a teacher  
 19 18 go in helping that student understand  
 20 19 the theory and to then later  
 21 20 criticize the theory?  
 22 21 A. It's probably, in reality,  
 23 22 a function of the amount of time the  
 24 23 teacher has, the level of the  
 25 24 students in that particular class at

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1 00194  
 2 1 that particular time, whether the  
 3 2 teacher wants all students in the  
 4 3 class to understand at what  
 5 4 particular level versus just maybe  
 6 5 the quicker students in regard to  
 7 6 this particular subject that happened  
 8 7 to be learning quicker, while others  
 9 8 may just, for whatever reasons, in  
 10 9 this particular subject in this  
 11 10 particular time be learning less  
 12 11 quickly.  
 13 12 So it's a judgment call on  
 14 13 the individual instructor.  
 15 14 Q. In teaching science, in  
 16 15 learning about science in a public  
 17 16 high school science room, should  
 18 17 ideas be taught or scientific  
 19 18 theories be taught in a manner in  
 20 19 which a student learns all sides of  
 21 20 the theory?  
 22 21 A. I don't understand what  
 23 22 "all sides of the theory" means.  
 24 23 Q. Well, competing ideas with  
 25 24 regard to a theory in science.

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1 00195  
 2 1 A. It's my opinion that given  
 3 2 the amount of time in a high school  
 4 3 classroom, that certain scientific  
 5 4 theories should be presented; for  
 6 5 example, punctuated equilibrium  
 7 6 versus phyletic gradualism -- with a  
 8 7 P -- are two scientific theories that  
 9 8 often compete with one another.  
 10 9 Both are generally  
 11 10 presented to the students. Some  
 12 11 teachers find that they don't have  
 13 12 time to go into that detail for those  
 14 13 particular competing theories. Other  
 15 14 teachers find that they do have the  
 16 15 time to go into those competing  
 17 16 scientific theories.  
 18 17 Whether one would use a  
 19 18 nonscientific theory to compete with  
 20 19 a scientific theory in the classroom  
 21 20 would be inappropriate.  
 22 21 Q. If a student or if a  
 23 22 teacher, since earlier you said it's  
 24 23 the teacher who decides about  
 25 24 misconceptions or conceptions as a

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1 00196  
 2 1 teaching tool, what would be wrong  
 3 2 with a teacher comparing a, as you  
 4 3 say, nonscientific theory with a  
 5 4 scientific theory as a teaching tool?  
 6 5 A. It's a science classroom  
 7 6 and it has the high probability of  
 8 7 engendering the misconception that  
 9 8 the nonscientific theory is science.  
 10 9 We don't use as a foil demon  
 11 10 possession when we teach germ theory.  
 12 11 Q. In science are new ideas  
 13 12 generally -- new ideas that challenge  
 14 13 the status quo generally met with  
 15 14 acceptance?  
 16 15 A. I'm not in the scientific  
 17 16 community, but from what I read,  
 18 17 generally not. Generally new ideas  
 19 18 have a rough road to go in the world  
 20 19 of science.  
 21 20 Q. Because you had mentioned  
 22 21 the germ theory of disease. When  
 23 22 that theory was first raised by  
 24 23 Robert Koch, K-O-C-H, how was that  
 25 24 accepted by the mainline science



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1 00197  
 2 1 community?  
 3 2 A. It was not accepted  
 4 3 immediately with open arms, no.  
 5 4 Q. When the germ theory of  
 6 5 disease came out, would you say that  
 7 6 it ran contrary to the mainline  
 8 7 science community?  
 9 8 A. I don't know that to be the  
 10 9 case. I just don't know.  
 11 10 Q. In the teaching, as a  
 12 11 person who has expertise in teaching  
 13 12 science, would the introduction,  
 14 13 going back, you know, many years when  
 15 14 the germ theory disease came out,  
 16 15 would the introduction of that theory  
 17 16 in a science classroom be good or bad  
 18 17 pedagogy?  
 19 18 MR. WALCZAK: At what time  
 20 19 are we talking about?  
 21 20 MR. WHITE: Back when the  
 22 21 idea first arose. He understood.  
 23 22 THE WITNESS: If the  
 24 23 teachers had the capability back then  
 25 24 in the 1800s to examine the

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1 00198  
 2 1 scientific establishment and see that  
 3 2 it was being debated in the  
 4 3 scientific journals, and the leading  
 5 4 scientific organization said, yes,  
 6 5 this has some validity, it is still  
 7 6 being argued, of course, in the  
 8 7 scientific community, and if the  
 9 8 teachers had the time and they felt  
 10 9 it was pedagogically advantageous,  
 11 10 then yes.  
 12 11 BY MR. WHITE:  
 13 12 Q. Going back in time, a  
 14 13 school board required a teacher to  
 15 14 read at the beginning of class that  
 16 15 there is this theory called germ  
 17 16 theory disease which is contrary to  
 18 17 the established theory, if you want  
 19 18 to go in the library, go look at a  
 20 19 book, would that be good or bad  
 21 20 pedagogy?  
 22 21 A. If the leading academies of  
 23 22 science at the time and the large  
 24 23 academies of science at the time, and  
 25 24 the journals, scientific journals of

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1 00199  
 2 1 the time, and the scientific  
 3 2 conferences of the time felt that it  
 4 3 was science and it was credible and  
 5 4 it was important, then I don't see a  
 6 5 negative for it to be done, as you  
 7 6 said for it to be done, provided the  
 8 7 teacher has enough time to fit it in  
 9 8 with all the other mainline science  
 10 9 that they are expected to teach.  
 11 10 Q. I'm just saying, reading  
 12 11 the one sentence, that there is this  
 13 12 alternative called a germ theory  
 14 13 disease, and if you want, go look at  
 15 14 Robert Koch's book in the library.  
 16 15 A. Provided all of my "if"  
 17 16 concerning the national academies,  
 18 17 the national science organizations,  
 19 18 the journals, the conferences said it  
 20 19 is science, it's appropriate, we are  
 21 20 still arguing it, then I see no harm  
 22 21 in doing what you suggest.  
 23 22 Q. So before a teacher can  
 24 23 mention anything in a science  
 25 24 classroom, it has to be approved by

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1 00200  
 2 1 all these science conventions and  
 3 2 associations?  
 4 3 A. Science teachers are not  
 5 4 scientists. They don't have research  
 6 5 labs, they don't have doctoral  
 7 6 degrees in science, most of them,  
 8 7 anyway, they don't publish in  
 9 8 scientific research journals, they  
 10 9 don't go to scientific conferences,  
 11 10 they aren't funded by state and  
 12 11 federal organizations to promote  
 13 12 their scientific research.  
 14 13 So if they do find  
 15 14 something in the newspaper or a  
 16 15 popular magazine that mentions  
 17 16 something about science, I think a  
 18 17 responsible science teacher would  
 19 18 check either their educational  
 20 19 science associations or the  
 21 20 scientific associations to see if  
 22 21 it's credible before they introduce  
 23 22 possible misconceptions into the  
 24 23 classroom.  
 25 24 Q. So, in other words, a

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1 00201  
 2 1 science teacher can't think for  
 3 2 themselves?  
 4 3 A. Oh, that's very much  
 5 4 thinking for themselves. They are  
 6 5 thinking that I'm not sure this  
 7 6 reporter in this popular magazine is  
 8 7 reporting this accurately, maybe I  
 9 8 will go to the original source, maybe  
 10 9 I will check with the scientific  
 11 10 community and see if this is proper.  
 12 11 It is very much thinking for  
 13 12 themselves.  
 14 13 In fact, they are thinking  
 15 14 critically about what they are  
 16 15 reading before they pass on this  
 17 16 information to their students.  
 18 17 Q. Is there any difference in  
 19 18 science between just a general theory  
 20 19 and a scientific theory?  
 21 20 A. I don't understand.  
 22 21 Q. I mean, is there a  
 23 22 difference between a scientific  
 24 23 theory and then a theory?  
 25 24 A. The general public, through

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1 00202  
 2 1 no expertise in my background but  
 3 2 just hearing the word used through  
 4 3 many decades, theory in the media,  
 5 4 theory in movies, theory in  
 6 5 literature, theory on the streets is  
 7 6 just some idea, anything from I had a  
 8 7 theory of why my coffee tastes bad  
 9 8 this morning to theories used and  
 10 9 bounced around on X Files series and  
 11 10 so forth, whereas a scientific theory  
 12 11 is something generally that has been  
 13 12 extensively tested and is an  
 14 13 explanation of a natural phenomenon.  
 15 14 I think there is much  
 16 15 confusion among students between the  
 17 16 lay public's understanding of the  
 18 17 word "theory" that we just used when  
 19 18 we are speaking generally versus when  
 20 19 we use it in particular in science.  
 21 20 Q. As it relates to biology,  
 22 21 what is evolution?  
 23 22 A. Evolution is generally  
 24 23 considered descent with modification.  
 25 24 Q. Is evolution a theory in

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1 00203  
 2 1 science?  
 3 2 A. Evolution is a theory and  
 4 3 fact.  
 5 4 Q. How is it a theory?  
 6 5 A. It's a theory because it  
 7 6 explains the diversity of life on the  
 8 7 planet.  
 9 8 Q. Any other way it's a  
 10 9 theory?  
 11 10 A. Well, it has theoretical  
 12 11 parts. There are the mechanisms that  
 13 12 we referred to earlier that  
 14 13 scientists are still arguing, and  
 15 14 those are explanations and -- but  
 16 15 they are various explanations  
 17 16 concerning various parts of  
 18 17 evolution. There are many theories  
 19 18 or subtheories concerning evolution  
 20 19 that I'm not familiar with but that I  
 21 20 know are present.  
 22 21 Q. Well, the theory as you  
 23 22 describe it as evolution explains the  
 24 23 diversity of life on the planet,  
 25 24 that's the main reason it's a theory?

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1 00204  
 2 1 A. It's an explanation, and it  
 3 2 explains something that we see, yes.  
 4 3 Q. Now, as it relates to the  
 5 4 explanation of diversity of life on  
 6 5 the planet, is there evidence to  
 7 6 support all the explanations of that  
 8 7 theory?  
 9 8 A. Could you phrase that  
 10 9 another way? I don't understand it  
 11 10 that way.  
 12 11 Q. You say that fear of  
 13 12 evolution explains diversity of life  
 14 13 on the planet. Is there evidence to  
 15 14 support all of the explanations of  
 16 15 why there is diversity of life on the  
 17 16 planet?  
 18 17 A. I've never heard of any  
 19 18 counterevidence. In fact, I've read  
 20 19 that there is no counterevidence to  
 21 20 evolution, the occurrence of  
 22 21 evolution, and that occurrence of  
 23 22 evolution is the explanation for the  
 24 23 diversity of life on the planet.  
 25 24 Q. Now, the mechanisms, that's

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1 00205  
 2 1 what we talked about before where  
 3 2 they are not -- I believe you had  
 4 3 said -- let me get it exactly -- you  
 5 4 had said that not all of the  
 6 5 evolutionary processes are fully  
 7 6 understood. So the processes are the  
 8 7 mechanisms that you are talking  
 9 8 about?  
 10 9 A. Yes. That comment was  
 11 10 particularly towards the mechanisms  
 12 11 and not towards the occurrence of  
 13 12 evolution.  
 14 13 Q. Now, what's the fact of  
 15 14 evolution?  
 16 15 A. The fact of evolution is  
 17 16 that it occurred and is occurring.  
 18 17 It's observable in the field, it's  
 19 18 observable in the laboratory, it's  
 20 19 observable in the fossil record, and  
 21 20 there are inferential ways in which  
 22 21 it is observed.  
 23 22 So the factual nature of it  
 24 23 has come about not simply as an  
 25 24 observable fact in and of itself, it

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1 00207  
 2 1 there has been a change in life over  
 3 2 the 3 million plus years of life on  
 4 3 the -- 3 billion -- excuse me --  
 5 4 years of life on the planet, that  
 6 5 there's common ancestry, and that the  
 7 6 forces that are observable to us  
 8 7 today are enough to explain that  
 9 8 change.  
 10 9 Q. Does Darwin's theory differ  
 11 10 from neoDarwinism?  
 12 11 A. I don't recognize one  
 13 12 definition of neoDarwinism. I've  
 14 13 seen various definitions, none that I  
 15 14 can recall accurately at the moment.  
 16 15 Generally -- and this is  
 17 16 very vaguely -- I see it referred to  
 18 17 often as neoDarwinism, that Darwin in  
 19 18 his time knew very little about  
 20 19 genetics, and so as modern biology  
 21 20 and genetics came in, there was a  
 22 21 synthesis of evidence pointing  
 23 22 towards Darwin's ideas, and some  
 24 23 people referred to that as  
 25 24 neoDarwinism.

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1 00206  
 2 1 is that it has become so accepted in  
 3 2 the scientific community that the  
 4 3 theory is still considered a theory,  
 5 4 an explanation, but is considered  
 6 5 factual.  
 7 6 No one, to my knowledge and  
 8 7 my reading of the leading societies,  
 9 8 is any longer testing, seriously  
 10 9 testing, whether evolution has  
 11 10 occurred.  
 12 11 Q. But they are testing the  
 13 12 mechanisms for evolution?  
 14 13 A. That's my understanding.  
 15 14 Q. Now, define Darwinism for  
 16 15 me.  
 17 16 A. I've seen so many  
 18 17 definitions, and I don't know if I  
 19 18 could recall any at this moment.  
 20 19 I've seen Darwinism used as meaning  
 21 20 Darwin's ideas about evolution.  
 22 21 Q. Well, Darwin's theory,  
 23 22 then, what is that?  
 24 23 A. Darwin's theory basically  
 25 24 was that evolution occurred, that

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1 00208  
 2 1 Q. NeoDarwinism would just be  
 3 2 a modification of Darwinism?  
 4 3 A. That's my understanding.  
 5 4 I'm not an expert in this area, and  
 6 5 I've seen various definitions on  
 7 6 that.  
 8 7 Q. On this whole area of  
 9 8 evolutionists, Darwinism,  
 10 9 neoDarwinism, where would you fall in  
 11 10 this? Do you have any view on this?  
 12 11 A. Within the scientific?  
 13 12 Q. Yes. I mean, are you an  
 14 13 evolutionist? Are you a Darwinist?  
 15 14 A. I accept that evolution is  
 16 15 the theory, the accepted scientific  
 17 16 theory, of the diversity of life I  
 18 17 see around us, yes.  
 19 18 Q. Then that and then in light  
 20 19 of your expertise in science  
 21 20 education, if a school, public  
 22 21 school, is teaching evolution, then  
 23 22 they would be properly instructing  
 24 23 students in the area of biology? I  
 25 24 mean, if evolution is fully taught in

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1 00209  
 2 1 a public high school, that is  
 3 2 something you would have no problem  
 4 3 with. Correct?  
 5 4 A. Evolution being taught in a  
 6 5 public high school?  
 7 6 Q. Uh-huh.  
 8 7 A. I think that's wonderful.  
 9 8 Q. Do you know what the  
 10 9 evolutionary tree of life is?  
 11 10 A. Vaguely.  
 12 11 Q. Have you ever heard of the  
 13 12 Cambrian Explosion?  
 14 13 A. Yes.  
 15 14 Q. What is that?  
 16 15 A. The -- this is not my area  
 17 16 of expertise, so you are going to get  
 18 17 a nonexpert answer, and I have not  
 19 18 taught evolution at the university  
 20 19 level, so here we go.  
 21 20 The Cambrian Explosion is a  
 22 21 point in time in which vertebrates  
 23 22 appear. We have hard-shell animals  
 24 23 appearing. It's the first time we  
 25 24 have notocord, a backbone, in

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1 00211  
 2 1 pressures on them result in  
 3 2 structures that are often similar to  
 4 3 other places with similar selective  
 5 4 pressures. There's so many things.  
 6 5 This is often up to the teacher, but  
 7 6 I will give you some more standard  
 8 7 ones.  
 9 8 Common ancestry. Sometimes  
 10 9 used as a foil is Lamarckianism  
 11 10 versus Darwin's ideas. A structural  
 12 11 similarity in embryology. If you  
 13 12 look at a rat, a turtle, and a  
 14 13 chicken, they have similar  
 15 14 structures, they look almost  
 16 15 identical in their embryonic state,  
 17 16 but yet they grow up to be completely  
 18 17 different-looking organisms.  
 19 18 There's embryonic homology  
 20 19 in which organisms look somewhat the  
 21 20 same in the embryonic state, but when  
 22 21 the tissue develops, it develops into  
 23 22 different type of forms in various  
 24 23 animals; for example, you have a  
 25 24 bunch of vertebrates, and the hand in

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1 00210  
 2 1 organisms -- it's in the fossil  
 3 2 record -- and this is the first  
 4 3 appearance of them. That's generally  
 5 4 what's known as the Cambrian  
 6 5 Explosion.  
 7 6 Q. Would that mean that these  
 8 7 vertebrates just abruptly appeared?  
 9 8 A. I'm not a paleontologist; I  
 10 9 don't have expertise in this area.  
 11 10 My understanding is that abruptly, in  
 12 11 a geological sense, not necessarily  
 13 12 that one minute in one day they  
 14 13 abruptly appeared, but in a  
 15 14 geological sense, there was an  
 16 15 occurrence in which these organisms  
 17 16 came into existence.  
 18 17 Q. What are the strengths in  
 19 18 the theory of evolution that should  
 20 19 be taught to students in a science  
 21 20 classroom in high school?  
 22 21 A. Fossil record is always  
 23 22 good. Geographic distribution that  
 24 23 organisms -- various places around  
 25 24 the planet that have selective

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1 00212  
 2 1 one organism would look similar to  
 3 2 the lobe-fin in another, and it would  
 4 3 look somewhat similar if you go to a  
 5 4 different type -- to an arm in  
 6 5 another type of organism, maybe a  
 7 6 bird or something like that, but they  
 8 7 all came from the same tissue, but  
 9 8 yet developed into somewhat similar  
 10 9 but different functions and forms in  
 11 10 the organisms.  
 12 11 I would teach students  
 13 12 about, as I mentioned previously,  
 14 13 punctuated equilibrium and phyletic  
 15 14 gradualism. I think that helps them  
 16 15 understand the tempo and mode of  
 17 16 evolution. I would teach students  
 18 17 many more things about evolution, but  
 19 18 it is always a constraint of time.  
 20 19 High school biology  
 21 20 teachers have generally thick books,  
 22 21 and it doesn't necessarily mean that  
 23 22 drives the curriculum -- hopefully it  
 24 23 doesn't, but between what the  
 25 24 curriculum says and the amount of



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1 00213  
 2 1 material in a textbook, often what  
 3 2 comes into play for teachers is how  
 4 3 much time do they have.  
 5 4 Often teachers devote  
 6 5 explicitly time to evolution, and  
 7 6 other times they will just use it  
 8 7 here and there throughout their  
 9 8 course. Again, it comes back to the  
 10 9 individual instructor.  
 11 10 Q. What weaknesses in the  
 12 11 theory of evolution should a high  
 13 12 school science class learn about?  
 14 13 A. I think one of the good  
 15 14 weaknesses probably to teach would  
 16 15 be, as should be taught in all  
 17 16 scientific theories, not every  
 18 17 scientific theory the scientists tell  
 19 18 us has it weaknesses, in evolution it  
 20 19 would be some of the hows, again, we  
 21 20 were talking about, some of the  
 22 21 mechanisms.  
 23 22 Most evolutionary  
 24 23 biologists that I read have strong  
 25 24 opinions concerning natural selection

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1 00215  
 2 1 part of science, that's part of  
 3 2 saying it doesn't explain everything.  
 4 3 Q. So, in other words, the  
 5 4 theory, then, should not be accepted  
 6 5 as a truth?  
 7 6 A. I don't like the word  
 8 7 "truth" used anywhere in science  
 9 8 except maybe on true or false exams.  
 10 9 Q. Okay. As an absolute?  
 11 10 A. I don't know if the word  
 12 11 "absolute" is ever used in science,  
 13 12 so I don't quite know how to answer  
 14 13 that.  
 15 14 Q. Okay. Then used that it's  
 16 15 a fact?  
 17 16 A. As I explained before,  
 18 17 evolution is a theory and fact, but  
 19 18 the students have to understand what  
 20 19 it means to be factual in science.  
 21 20 Stating something is a fact in  
 22 21 science does not mean that it will be  
 23 22 always that way.  
 24 23 Science is always open to  
 25 24 new evidence. All of our theories,

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1 00214  
 2 1 thinking it is a very strong  
 3 2 mechanism within evolution, but then  
 4 3 they debate how strong that is and  
 5 4 what other mechanisms come into play,  
 6 5 as we have discussed repeatedly  
 7 6 throughout this time together.  
 8 7 So a weakness would be that  
 9 8 we don't have confirmed ideas yet  
 10 9 that are absolute within the  
 11 10 scientific community. We don't have  
 12 11 overwhelming consensus yet on the  
 13 12 mechanisms for evolution and how they  
 14 13 interplay together and so forth.  
 15 14 Q. So in teaching weaknesses  
 16 15 of a theory in a science high school  
 17 16 classroom, is that indicating that  
 18 17 there are problems in the theory?  
 19 18 A. If it's taught properly, I  
 20 19 don't think it would create that. It  
 21 20 is stating, just like any other  
 22 21 scientific theory, there are some  
 23 22 unanswered questions concerning it,  
 24 23 we don't quite understand all the  
 25 24 mechanisms of evolution, and that's

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1 00216  
 2 1 all of our facts, all of our  
 3 2 observations are tentative. And that  
 4 3 means that as new information comes  
 5 4 in, in principle, we should accept  
 6 5 that new information and, if  
 7 6 necessary, modify our theories' laws.  
 8 7 Q. So, in other words, keeping  
 9 8 an open mind about the theory?  
 10 9 A. That's your words, not  
 11 10 mine, but if that's what you want to  
 12 11 think of as an open mind, then that's  
 13 12 fine with me.  
 14 13 Q. What is creationism?  
 15 14 A. Creationism. There's so  
 16 15 many different types of creationisms  
 17 16 it would be difficult to answer, but  
 18 17 I will do my best. Briefly, it's a  
 19 18 supernatural power that created.  
 20 19 Q. Is creationism, under that  
 21 20 definition, then, a theory?  
 22 21 A. It's not a scientific  
 23 22 theory.  
 24 23 Q. Why wouldn't it be a  
 25 24 scientific theory?

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1 00217

2 1 A. Science operates -- what --

3 2 one of the areas of science operates

4 3 or ground rules of science, as it's

5 4 often called, is methodological

6 5 naturalism, and methodological

7 6 naturalism is basically that we do

8 7 research on -- by trying to find

9 8 natural causes for natural phenomena.

10 9 Q. And what's creation

11 10 science?

12 11 A. Creation science, in my

13 12 view, is an oxymoron and was created,

14 13 as far as my understanding of the

15 14 history of it, by young earth

16 15 creationists, a particular type of

17 16 creationists, who tried to -- and

18 17 apparently still are trying -- to say

19 18 that creationism can be a form of

20 19 science.

21 20 Q. Explain that more for me.

22 21 A. I think maybe a specific

23 22 example might be good. The Institute

24 23 for Creation Research in El Cajon,

25 24 California.

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1 00219

2 1 scientific creationism that they

3 2 believe it's -- it could be examined

4 3 regardless of one's religious points

5 4 of view and that it has scientific

6 5 merit.

7 6 Q. And what's intelligent

8 7 design as it is related to biology

9 8 and science?

10 9 A. To me, intelligent design

11 10 is a theological and philosophical

12 11 idea attempting to masquerade as

13 12 science in schools.

14 13 Q. How is it a theological

15 14 idea?

16 15 A. Well, it has the word --

17 16 every time I've read about

18 17 intelligent design somewhere from

19 18 intelligent design authors or in "Of

20 19 Pandas And People," the word

21 20 "supernatural" is there somewhere;

22 21 but when I open science textbooks and

23 22 I open science journals and I go to

24 23 science conferences, I don't hear

25 24 supernatural as a possible cause in

PAGE 218

1 00218

2 1 Q. Excuse me; what did you

3 2 say?

4 3 A. In El Cajon, California, is

5 4 probably, I believe, the largest

6 5 research creationist institute on the

7 6 planet. And they believe that they

8 7 are using scientific methodology to

9 8 show that evolution doesn't work,

10 9 that evolution is wrong, and that

11 10 people should recognize supernatural

12 11 causes within science.

13 12 Q. Would creation science

14 13 depend on a Biblical view when it

15 14 comes to evolution?

16 15 A. In this -- this particular

17 16 institute parses out two types of

18 17 scientific creationism.

19 18 They say there is

20 19 scientific creationism that is

21 20 Biblical, that is truly a theological

22 21 point of view, a religious point of

23 22 view, and then they also say -- and

24 23 this is the more important point,

25 24 probably -- is that there is a

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1 00220

2 1 the scientific world.

3 2 Q. How is it a philosophical

4 3 idea?

5 4 A. When I read intelligent

6 5 design materials, I often recognize

7 6 things that I consider to be sort of

8 7 the basis of science, they are more

9 8 the philosophical arguments of

10 9 demarcation between science and

11 10 nonscience, which scientists

12 11 typically don't appear to argue, but

13 12 philosophers of science apparently

14 13 have discussed over the decades this

15 14 matter.

16 15 Q. What intelligent design

17 16 materials have you read?

18 17 A. I will never recall them

19 18 all here at this moment, but --

20 19 Q. Just give me the main

21 20 ones.

22 21 A. Okay. "Darwin's Black

23 22 Box," Behe. "Darwin On Trial,"

24 23 Phillip Johnson. "Defeating

25 24 Darwinism," Johnson. I read

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1 00221  
 2 1 something by Meyer. I read something  
 3 2 by Demski. Of course "Of Pandas And  
 4 3 People." There are others, but at  
 5 4 the moment I can't recall.  
 6 5 Q. Now, on some of these books  
 7 6 you have listed here, "Of Pandas And  
 8 7 People," am I correct you say that  
 9 8 that's not a scientific book?  
 10 9 A. It is not scientific  
 11 10 because -- well, there may be  
 12 11 multiple reasons, but one of the  
 13 12 fundamental reasons, since we are  
 14 13 talking about it right now, is the  
 15 14 ground rule of methodological  
 16 15 naturalism, and when I open up "Of  
 17 16 Pandas And People," I see a possible  
 18 17 supernatural cause.  
 19 18 Q. Because of the air blower I  
 20 19 didn't hear the last part of your  
 21 20 sentence.  
 22 21 MR. WHITE: Can you please  
 23 22 repeat that? I'm sorry.  
 24 23 (The court reporter read  
 25 24 back the following:

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1 00223  
 2 1 preexisting intelligence?  
 3 2 A. From what I read is there  
 4 3 is no explanation that exists in the  
 5 4 natural world that it is appealing to  
 6 5 something that we do not understand  
 7 6 to be natural, something that is so  
 8 7 far afield to the natural world that  
 9 8 in essence it is supernatural.  
 10 9 Q. And that's just your  
 11 10 interpretation of the reading?  
 12 11 A. That particular reading,  
 13 12 and the National Academy of Sciences,  
 14 13 and the AAAS, both contend that  
 15 14 intelligent design is not science.  
 16 15 Q. Is intelligent design  
 17 16 dependent on the Bible to reach its  
 18 17 conclusions?  
 19 18 A. I don't believe so.  
 20 19 Q. Is it dependent on any  
 21 20 sacred scripture?  
 22 21 A. I don't believe so.  
 23 22 Q. Does the theory of  
 24 23 intelligent design depend on any  
 25 24 religious faith?

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1 00222  
 2 1 "A. It is not scientific  
 3 2 because -- well, there may be  
 4 3 multiple reasons, but one of the  
 5 4 fundamental reasons, since we are  
 6 5 talking about it right now, is the  
 7 6 ground rule of methodological  
 8 7 naturalism, and when I open up "Of  
 9 8 Pandas And People," I see a possible  
 10 9 supernatural cause.")  
 11 10 BY MR. WHITE:  
 12 11 Q. What about the book -- you  
 13 12 mentioned "Darwin's Black Box." Is  
 14 13 that a scientific book?  
 15 14 A. I don't consider it a  
 16 15 scientific book.  
 17 16 Q. Why is that?  
 18 17 A. Again, in the book it  
 19 18 brings up the possibility of  
 20 19 supernatural causation.  
 21 20 Q. Now, can intelligent design  
 22 21 be considered that biological  
 23 22 organisms owe their origin to a  
 24 23 preexisting intelligence, not a  
 25 24 supernatural intelligence, just a

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1 00224  
 2 1 A. I don't think so.  
 3 2 Q. Does intelligent design say  
 4 3 who the designer was?  
 5 4 A. From what I have read, no.  
 6 5 Q. Does intelligent design  
 7 6 depend on any religious experience or  
 8 7 tradition?  
 9 8 A. Only the tradition of  
 10 9 accepting nonnaturalistic causes for  
 11 10 natural phenomena.  
 12 11 Q. Does the theory of  
 13 12 intelligent design lead one to  
 14 13 believe that the designer is a God?  
 15 14 A. I have no idea about the  
 16 15 general public; however, I would  
 17 16 contend that if 15-year-old children  
 18 17 in 9th grade were to juxtapose  
 19 18 evolution that doesn't mention a  
 20 19 supernatural possibility to  
 21 20 intelligent design that explicitly  
 22 21 mentions a supernatural possibility,  
 23 22 that the students will associate  
 24 23 intelligent design to meaning God or  
 25 24 God-friendly, at least, or

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1 00225  
 2 1 religion-friendly and evolution to be  
 3 2 not religious-friendly.  
 4 3 Q. In the book "Of Pandas And  
 5 4 People," does it make a reference  
 6 5 that the designer is a supernatural  
 7 6 being, from your review of the  
 8 7 sections that you said you had  
 9 8 reviewed prior to --  
 10 9 A. May I look at my sections  
 11 10 that I had looked at earlier?  
 12 11 Q. Sure.  
 13 12 A. On Page 100, the last  
 14 13 sentence in the first paragraph  
 15 14 states: "This alternative suggests  
 16 15 that a reasonable natural cause  
 17 16 explanation for origins may never be  
 18 17 found and that intelligent design  
 19 18 best fits the data."  
 20 19 Q. But that is not saying that  
 21 20 it's a supernatural being, is it?  
 22 21 A. It is stating that it is  
 23 22 nonnatural, and the only nonnatural  
 24 23 I'm aware of is the supernatural.  
 25 24 Q. Read that sentence one more

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1 00227  
 2 1 freely debate and discuss matters in  
 3 2 a critical fashion.  
 4 3 A. I think it would be  
 5 4 completely inappropriate in a high  
 6 5 school -- public high school science  
 7 6 classroom to debate whether evolution  
 8 7 disproves the existence of God or  
 9 8 not, for example.  
 10 9 Q. But other than that?  
 11 10 A. I think it would be  
 12 11 completely inappropriate to bring up  
 13 12 a causal activity to natural  
 14 13 phenomena and explain that causation  
 15 14 to be supernatural.  
 16 15 (Alters Exhibit 4 was  
 17 16 marked for identification.)  
 18 17 BY MR. WHITE:  
 19 18 Q. I would like to show you --  
 20 19 I don't know if this is Exhibit 4.  
 21 20 THE COURT REPORTER: Yes.  
 22 21 BY MR. WHITE:  
 23 22 Q. This is just -- I can give  
 24 23 you the actual photocopy of Miller,  
 25 24 Levine.

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1 00226  
 2 1 time for me, please.  
 3 2 A. "This alternative suggests  
 4 3 that a reasonable natural cause  
 5 4 explanation for origins may never be  
 6 5 found and that intelligent design  
 7 6 best fits the data."  
 8 7 Q. Let me see that book,  
 9 8 please.  
 10 9 In a science classroom, is  
 11 10 a science classroom in a public  
 12 11 school a forum for inquiry?  
 13 12 A. Yes.  
 14 13 Q. Is a science classroom in a  
 15 14 public high school a forum for  
 16 15 critical discussions?  
 17 16 A. Appropriate critical  
 18 17 discussions, yes.  
 19 18 Q. And in a science classroom  
 20 19 should there be an opportunity for  
 21 20 open critical discussions to take  
 22 21 place?  
 23 22 A. I don't know what you mean  
 24 23 by "open."  
 25 24 Q. Well, where people can

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1 00228  
 2 1 MR. WALCZAK: Do you know  
 3 2 which edition this is?  
 4 3 MR. WHITE: Yes. Exhibit 4  
 5 4 is the 2004 edition of Miller and  
 6 5 Levine; "Biology," with the dragonfly  
 7 6 on the front.  
 8 7 MR. WALCZAK: It's known as  
 9 8 the dragonfly edition. Yes. Thank  
 10 9 you.  
 11 10 BY MR. WHITE:  
 12 11 Q. Now, you said you were  
 13 12 familiar with this "Biology"  
 14 13 textbook, but you had reviewed it --  
 15 14 a much earlier version of it about  
 16 15 ten years ago, I believe you said?  
 17 16 A. I don't remember which  
 18 17 edition, but it was late '80s, so  
 19 18 probably five, six, seven, eight  
 20 19 years ago, and --  
 21 20 MR. WALCZAK: Late '80s or  
 22 21 '90s?  
 23 22 THE WITNESS: Late '90s.  
 24 23 Did I say '80s?  
 25 24 MR. WALCZAK: You said



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1 00229  
 2 1 '80s.  
 3 2 THE WITNESS: Sorry.  
 4 3 Late '90s. Six, seven,  
 5 4 eight years ago, probably, and, no,  
 6 5 I'm not that familiar from that long  
 7 6 ago. I don't even recall which  
 8 7 section I reviewed.  
 9 8 BY MR. WHITE:  
 10 9 Q. If you can turn to the  
 11 10 third page of that photocopy, which  
 12 11 is Page 386 of Chapter 15 of the  
 13 12 textbook.  
 14 13 A. Yes.  
 15 14 Q. In the bottom text section  
 16 15 or the section of the text Strengths  
 17 16 and Weaknesses of Evolutionary  
 18 17 Theory?  
 19 18 A. Yes.  
 20 19 Q. If you can read that out  
 21 20 loud for the record, please.  
 22 21 A. "Scientific advances in  
 23 22 many fields of biology, along with  
 24 23 geology and physics, have confirmed  
 25 24 and expanded most of Darwin's

PAGE 231

1 00231  
 2 1 that the mechanism of the theory you  
 3 2 were talking about before?  
 4 3 A. Yes.  
 5 4 Q. And then regarding the  
 6 5 uncertainty about how life begins, is  
 7 6 that also the mechanism of the  
 8 7 theory?  
 9 8 A. Yes. We have great  
 10 9 discussions still continuing on how  
 11 10 life originated.  
 12 11 Q. Now, this current debate  
 13 12 that's laid out in this paragraph we  
 14 13 are looking at, how is that not a gap  
 15 14 in the theory of evolution?  
 16 15 A. It's not a gap concerning  
 17 16 whether evolution occurred; it's an  
 18 17 area in which discussion is still  
 19 18 going on, as it does in almost all  
 20 19 areas of science, concerning the  
 21 20 mechanism of evolution. I don't  
 22 21 particularly like the word "gap."  
 23 22 It sounds like something is  
 24 23 missing that naturally should be  
 25 24 there. Science is appropriately

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1 00230  
 2 1 hypotheses. Today evolutionary  
 3 2 theory offers vital insights to all  
 4 3 biological and biomedical sciences  
 5 4 from infectious disease research to  
 6 5 ecology. In fact, evolution is often  
 7 6 called the 'grand unifying theory of  
 8 7 the life sciences.'  
 9 8 Do you want me to continue?  
 10 9 Q. Please.  
 11 10 A. "Like any scientific  
 12 11 theory, evolutionary theory continues  
 13 12 to change as new data are gathered  
 14 13 and new ways of thinking arise. As  
 15 14 you will see shortly, researchers  
 16 15 still debate such important questions  
 17 16 as precisely how new species arise  
 18 17 and why species become extinct.  
 19 18 These are also -- there is also  
 20 19 uncertainty about how life began."  
 21 20 Q. Now, the part of this  
 22 21 textbook where it says "researchers  
 23 22 still debate such important questions  
 24 23 as precisely how new species arise  
 25 24 and why species become extinct," is

PAGE 232

1 00232  
 2 1 discussing and refining the hows of  
 3 2 evolution.  
 4 3 Q. When you are saying whether  
 5 4 evolution occurred, I thought that  
 6 5 was a fact, whether evolution  
 7 6 occurred?  
 8 7 A. It's a fact and theory.  
 9 8 It's an explanation of -- to explain  
 10 9 the diversity of life we see on the  
 11 10 planet, and it's a fact because it's  
 12 11 universally accepted among the  
 13 12 scientific community that they no  
 14 13 longer even test whether it occurred  
 15 14 or not. It's considered factual.  
 16 15 Q. How is the debate and  
 17 16 uncertainty about how life began, how  
 18 17 was that not a problem in the theory  
 19 18 of evolution?  
 20 19 A. I don't understand what you  
 21 20 mean by "a problem."  
 22 21 Q. Well, what do you  
 23 22 interpret -- when someone says  
 24 23 there's a problem with the theory of  
 25 24 evolution, what does that mean to

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1 00233  
 2 1 you?  
 3 2 A. I generally don't hear  
 4 3 that. I hear that the science is  
 5 4 alive and well and they are debating  
 6 5 various areas and investigating and  
 7 6 studying and doing what science does,  
 8 7 trying to find an explanation of the  
 9 8 origin of life. They have been  
 10 9 trying this for a long time now.  
 11 10 Q. And when someone says  
 12 11 there's a gap in the theory of  
 13 12 evolution, does that mean anything to  
 14 13 you?  
 15 14 A. I generally ask -- it  
 16 15 doesn't happen often, but I generally  
 17 16 ask what they mean by "gap."  
 18 17 Q. Well, what do you think the  
 19 18 word "gap" means?  
 20 19 A. They generally bring up  
 21 20 gaps in the fossil record, that there  
 22 21 is a gap in knowledge concerning the  
 23 22 occurrence of evolution, that  
 24 23 scientists have such missing aspects  
 25 24 of the occurrence of evolution that

PAGE 235

1 00235  
 2 1 Commonwealth of Pennsylvania, the  
 3 2 January 5th, 2002 edition.  
 4 3 Prior to your involvement  
 5 4 in this case, did you have any  
 6 5 familiarity with the Academic  
 7 6 Standards for Science and Technology  
 8 7 in Pennsylvania?  
 9 8 A. No.  
 10 9 Q. How did you acquire your  
 11 10 familiarity with those standards?  
 12 11 A. I believe I went online to  
 13 12 take a look at them.  
 14 13 Q. What's the purpose of  
 15 14 academic standards from a state?  
 16 15 A. Well, my understanding --  
 17 16 all states are not exactly the same,  
 18 17 but that it is suggestions, that it  
 19 18 is a standard that schools might want  
 20 19 to consider for various parts. They  
 21 20 can adhere to some parts and maybe  
 22 21 not adhere as closely to other parts.  
 23 22 Q. Do you know what the rule  
 24 23 is in Pennsylvania?  
 25 24 A. No.

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1 00234  
 2 1 they are seriously questioning  
 3 2 whether evolution occurred. That's  
 4 3 generally the response I get from  
 5 4 people.  
 6 5 Q. Now, the school district  
 7 6 who uses this Miller and Levine  
 8 7 "Biology" textbook in its science  
 9 8 classes, are students being presented  
 10 9 with a good source to learn biology  
 11 10 and evolution?  
 12 11 A. I haven't reviewed this  
 13 12 edition of the book, and even the  
 14 13 last edition I haven't, but I have  
 15 14 skimmed this page very quickly and it  
 16 15 looks good to me.  
 17 16 MR. WHITE: Want to take a  
 18 17 break?  
 19 18 (Recess taken.)  
 20 19 (Alters Exhibit 5 was  
 21 20 marked for identification.)  
 22 21 BY MR. WHITE:  
 23 22 Q. I will show you Exhibit 5,  
 24 23 Appendix B of the Academic Standards  
 25 24 for Science and Technology from the

PAGE 236

1 00236  
 2 1 Q. Do you know what a school  
 3 2 board's obligation is regarding  
 4 3 standards in Pennsylvania?  
 5 4 A. No.  
 6 5 Q. Do you know in Pennsylvania  
 7 6 how the school board would comply  
 8 7 with the standards as set forth by  
 9 8 the State of Pennsylvania?  
 10 9 A. No.  
 11 10 Q. What's the role of a  
 12 11 teacher with regard to the  
 13 12 application of teaching standards in  
 14 13 Pennsylvania?  
 15 14 A. Their legal role, their  
 16 15 contractual role?  
 17 16 Q. Just their role as a  
 18 17 teacher.  
 19 18 A. I would hope that they were  
 20 19 admonished in their university  
 21 20 classes to take a look at their state  
 22 21 standards.  
 23 22 Q. Now if you could turn,  
 24 23 please, to Page 10 of Exhibit 5. The  
 25 24 page numbers are marked on the bottom

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1 00237  
 2 1 right-hand corner.  
 3 2 A. Yes.  
 4 3 Q. The third column over from  
 5 4 the left which says 3.2.10, Grade 10.  
 6 5 A. Yes.  
 7 6 Q. It's your understanding  
 8 7 that in Pennsylvania by the grade 10,  
 9 8 students should be able to acquire  
 10 9 the knowledge and the skills needed  
 11 10 to fulfill the items that are set  
 12 11 forth in that column?  
 13 12 A. If that's what you are  
 14 13 telling me.  
 15 14 Q. Well, what does it say at  
 16 15 the top of the page there,  
 17 16 "Pennsylvania's public schools shall  
 18 17 teach" --  
 19 18 A. "Pennsylvania's public  
 20 19 schools shall teach, challenge and  
 21 20 support every student to realize his  
 22 21 or her maximum potential and to  
 23 22 acquire the knowledge and skills  
 24 23 needed to."  
 25 24 Q. And then A under 3.2.10

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1 00239  
 2 1 statement is concerning something  
 3 2 that is not scientific.  
 4 3 Q. Now, if you look to the  
 5 4 fourth column on Page 10 of Exhibit  
 6 5 5, it says, "By Grade 12 to evaluate  
 7 6 the nature of scientific and  
 8 7 technological knowledge," and then  
 9 8 the second paragraph down says,  
 10 9 "Critically evaluate the status of  
 11 10 existing theories; for example, germ  
 12 11 theory of disease, wave theory of  
 13 12 light, classification of subatomic  
 14 13 particles, theory of evolution, and  
 15 14 epidemiology of aids."  
 16 15 Now, "critically evaluate  
 17 16 the status of existing theories,"  
 18 17 theory of evolution." So you don't  
 19 18 have any problem with the theory of  
 20 19 evolution being critically evaluated  
 21 20 in the classroom of a public high  
 22 21 school, do you?  
 23 22 A. I have a problem with it  
 24 23 being singled out as a theory to be  
 25 24 evaluated. The sentence states "for

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1 00238  
 2 1 says what --  
 3 2 A. Yep.  
 4 3 Q. -- "Apply knowledge" --  
 5 4 A. Yes.  
 6 5 Q. -- "and understanding about  
 7 6 the nature of scientific and  
 8 7 technological knowledge?"  
 9 8 A. Yes.  
 10 9 Q. "Compare and contrast  
 11 10 scientific theories and beliefs?"  
 12 11 A. Yes.  
 13 12 Q. Then "Integrate new  
 14 13 information into existing theories  
 15 14 and explain implied results?"  
 16 15 A. Yes.  
 17 16 Q. How is the four-paragraph  
 18 17 statement that is read to students --  
 19 18 Exhibit 2, I believe -- how is that  
 20 19 not integrating new information into  
 21 20 existing theories and explaining  
 22 21 implied results?  
 23 22 A. I think the assumption here  
 24 23 is integrating scientific  
 25 24 information. The information in the

PAGE 240

1 00240  
 2 1 example." It does not state this is  
 3 2 the total list. So germ theory of  
 4 3 diseases, wave theory of light,  
 5 4 classification of subatomic  
 6 5 particles, theory of evolution,  
 7 6 epidemiology of aids is just some  
 8 7 examples of the many things that  
 9 8 students may be encouraged to  
 10 9 critically evaluate.  
 11 10 Q. But a school could choose  
 12 11 just to critically evaluate the germ  
 13 12 theory of disease?  
 14 13 A. I imagine the school could  
 15 14 choose just to do one thing in these  
 16 15 entire standards. I'm not saying  
 17 16 that would be good.  
 18 17 Q. But if there's a listing  
 19 18 there "for example," that doesn't  
 20 19 mean that the entire listing has to  
 21 20 be critically evaluated, does it?  
 22 21 A. I don't know what the  
 23 22 criteria for the State of  
 24 23 Pennsylvania is, but, again, having a  
 25 24 list and critically evaluating

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1 00241  
 2 1 existing theories is fine, and  
 3 2 evolution is one of these as  
 4 3 examples, and we can probably list  
 5 4 many, many more.  
 6 5 Q. If you can turn to Pages 13  
 7 6 and 14. Excuse me; it starts on Page  
 8 7 12. So this academic standards is  
 9 8 for biological sciences. Correct?  
 10 9 A. Yes.  
 11 10 Q. Then on Page 13, the third  
 12 11 column, Section D.  
 13 12 A. Yes.  
 14 13 Q. These are the areas in  
 15 14 which students need to acquire  
 16 15 knowledge and skills by the 10th  
 17 16 grade. Correct?  
 18 17 A. Correct.  
 19 18 Q. And as far as you know, the  
 20 19 students in Dover are being taught in  
 21 20 these areas in their science  
 22 21 classrooms by 9th grade?  
 23 22 A. I saw a lot of similarities  
 24 23 between their curriculum and these  
 25 24 standards, but I did not go word for

PAGE 243

1 00243  
 2 1 scientists out there -- I believe it  
 3 2 was Krick who said that you  
 4 3 constantly have to remind yourself  
 5 4 that these were not designed, the  
 6 5 things that you are looking at in  
 7 6 nature are not designed? Are you  
 8 7 familiar with that?  
 9 8 A. I'm familiar with the  
 10 9 statement. I don't believe it was  
 11 10 attributed to Krick, but I'm familiar  
 12 11 with the statement, yes.  
 13 12 Q. Well, how do you make the  
 14 13 leap from the one four-paragraph  
 15 14 statement to these conclusions that  
 16 15 students are going to have a lesser  
 17 16 view of the theory of evolution to  
 18 17 cause these great misconceptions?  
 19 18 A. The students have an  
 20 19 unusual occurrence happen during  
 21 20 their class day. Somebody different  
 22 21 walks into their classroom,  
 23 22 apparently there is some opting out  
 24 23 allowed because this is so special.  
 25 24 Somebody they probably

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1 00242  
 2 1 word.  
 3 2 Q. Now, does the reading of  
 4 3 the four-paragraph statement the one  
 5 4 time at the start of the biology  
 6 5 course prevent students from  
 7 6 acquiring the knowledge and skills  
 8 7 needed to accomplish what's set forth  
 9 8 in Subparagraph D, as in dog?  
 10 9 A. Yes.  
 11 10 Q. How?  
 12 11 A. It states here in the  
 13 12 four-paragraph statement that's read  
 14 13 to the students that intelligent  
 15 14 design is an explanation. That could  
 16 15 very possibly lead students to think  
 17 16 that supernatural causation is a  
 18 17 possible factor in explaining the  
 19 18 mechanisms of the theory of  
 20 19 evolution.  
 21 20 The fourth bullet down says  
 22 21 "Describe the factors." I would not  
 23 22 be surprised at all if a student said  
 24 23 intelligent design.  
 25 24 Q. Now, aren't there some

PAGE 244

1 00244  
 2 1 don't recognize, the assistant  
 3 2 superintendent, reads a special  
 4 3 four-paragraph statement concerning  
 5 4 intelligent design. This will  
 6 5 probably get more attention from the  
 7 6 students than if the teacher had read  
 8 7 it, by far.  
 9 8 Not only that, it's  
 10 9 something that is in addition to what  
 11 10 the textbook probably says is the  
 12 11 major unifying theory of all of  
 13 12 biology.  
 14 13 It's very probable, in my  
 15 14 opinion, that students will remember  
 16 15 this. And it -- for many of them, it  
 17 16 allows the interjection of  
 18 17 supernatural causes into their  
 19 18 classroom biology activities. It's a  
 20 19 way that has informed them this is  
 21 20 okay. This is part of science.  
 22 21 This is a major  
 23 22 misconception. It is something that  
 24 23 good science teachers will probably  
 25 24 have to undo.



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1 00245

2 1 Q. How does a student come to

3 2 this conclusion about supernatural

4 3 causes just by the reading of this

5 4 statement in Exhibit 2?

6 5 A. "Intelligent design" --

7 6 it's the third paragraph of the Dover

8 7 statement -- "Intelligent design is

9 8 an explanation of the origin of life

10 9 that differs from Darwin's view. The

11 10 reference book 'Of Pandas And People'

12 11 is available for students who might

13 12 be interested in gaining an

14 13 understanding of what intelligent

15 14 design actually involves."

16 15 So now we have brought up

17 16 intelligent design, we have told them

18 17 that it differs from the view that

19 18 they are learning in the classroom,

20 19 we told them it concerns the -- an

21 20 explanation about the origin of life,

22 21 and then we have directly spelled out

23 22 the book that they can go and get

24 23 further information from.

25 24 "Of Pandas And People," as

PAGE 247

1 00247

2 1 Another student can say "It

3 2 means God did it."

4 3 "Oh."

5 4 So there are two ways. I

6 5 understand that you are saying -- or

7 6 questioning whether this statement

8 7 says directly "supernatural causes."

9 8 No, it doesn't. But in a reasonable

10 9 classroom it is not unreasonable to

11 10 believe that many students will

12 11 associate it with supernatural

13 12 causes.

14 13 Q. But those many students you

15 14 are talking about who have learned

16 15 about intelligent design maybe

17 16 through their churches or through the

18 17 popular media, wouldn't they already

19 18 know about intelligent design before

20 19 they hear this statement read to

21 20 them?

22 21 A. They may recognize that

23 22 it's a point of view that's connected

24 23 with their particular religion.

25 24 There may be a whole continuum from

PAGE 246

1 00246

2 1 we discussed just previously, brings

3 2 up nonnatural causes that intelligent

4 3 design is about.

5 4 Q. But how just from

6 5 reading -- being read that statement,

7 6 to students, and not going to get the

8 7 "Of Pandas And People," how do they

9 8 come to the conclusion that there's

10 9 supernatural consequences involved

11 10 here?

12 11 A. Two ways. One, they may

13 12 have heard of intelligent design. In

14 13 the thousands of students I've

15 14 interviewed, approximately 10 to 11

16 15 percent of them have heard about

17 16 intelligent design by name. They

18 17 generally learned about it in their

19 18 churches or church-related

20 19 activities. They associate it very

21 20 closely to God and their religion.

22 21 Second, students talk to

23 22 other students. A student can lean

24 23 over and say "What's this intelligent

25 24 design stuff?"

PAGE 248

1 00248

2 1 people who barely recognize they have

3 2 heard the term before all the way

4 3 over to students who possibly know a

5 4 lot about intelligent design, maybe

6 5 had Bible classes in church about

7 6 intelligent design, maybe have had

8 7 intelligent design authors come and

9 8 speak at their church possibly

10 9 concerning intelligent design.

11 10 So I would assume that

12 11 there would be a continuum of

13 12 students from knowing very little

14 13 about intelligent design all the way

15 14 over to knowing a lot about

16 15 intelligent design.

17 16 Q. But this concern you have

18 17 that maybe students would lean over

19 18 and start talking to each other about

20 19 intelligent design, that can happen

21 20 whether or not they hear this

22 21 statement. Correct?

23 22 A. Absolutely true. However,

24 23 this is being read by a guest to the

25 24 biology classroom, somebody that is

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1 00249  
 2 1 unusual, an event that, to my  
 3 2 knowledge, doesn't occur in other  
 4 3 biology class -- public school  
 5 4 biology classrooms across the nation.  
 6 5 A subject comes up, a  
 7 6 stranger walks in and reads four  
 8 7 paragraphs about other idea or ideas  
 9 8 besides what you are learning in this  
 10 9 class, tells you about a book located  
 11 10 somewhere, I assume, at the school,  
 12 11 and then walks out of the classroom.  
 13 12 This is a big event for the day for  
 14 13 students compared to the -- just the  
 15 14 teacher going on as usual.  
 16 15 Q. But it is the teachers who  
 17 16 chose not to read this statement;  
 18 17 that's why this guest is coming in,  
 19 18 correct, from your understanding?  
 20 19 A. My understanding is that  
 21 20 the science teachers decided not to  
 22 21 read this unscientific statement in  
 23 22 their science classrooms, yes.  
 24 23 Q. And then for a student to  
 25 24 come to this supernatural causes

PAGE 251

1 00251  
 2 1 in a public school, the average  
 3 2 15-year-old, ask that same question  
 4 3 when learning about evolution, where  
 5 4 did we come from?  
 6 5 A. It's very possible. In  
 7 6 fact, I have heard many times that  
 8 7 exact thing reported, and generally  
 9 8 good science teachers say that's a  
 10 9 question that can't be answered by  
 11 10 science, the -- whether evolution is  
 12 11 directed by a supreme being or not or  
 13 12 some unnatural forces is not a  
 14 13 question that we can entertain in  
 15 14 science because we have this ground  
 16 15 rule of just looking for natural  
 17 16 causes.  
 18 17 Q. Your opinion is that  
 19 18 intelligent design is saying that you  
 20 19 have to have a supernatural designer?  
 21 20 A. No, I didn't say that. I  
 22 21 have seen in intelligent design  
 23 22 writings where they often say a  
 24 23 possibly supernatural or  
 25 24 extraterrestrial agency. They don't

PAGE 250

1 00250  
 2 1 conclusion, it would be from looking  
 3 2 at "Of Pandas And People," that one  
 4 3 sentence on Page 100 you referred to  
 5 4 earlier?  
 6 5 A. There may be many other  
 7 6 places in the text, but that is the  
 8 7 one I referred to earlier.  
 9 8 Q. And for you to reach the  
 10 9 conclusion that Page 100 of "Of  
 11 10 Pandas And People" is stating that  
 12 11 it's a supernatural cause, that was  
 13 12 your extrapolation from the text  
 14 13 here. Correct?  
 15 14 A. I don't know anything  
 16 15 that's not natural; by default I  
 17 16 think it's supernatural. I would  
 18 17 think that's probably what most  
 19 18 15-year-old children would think.  
 20 19 And I think an average child would  
 21 20 probably ask, intelligent design, is  
 22 21 that -- who is doing the intelligent  
 23 22 designing?  
 24 23 Q. Wouldn't a student who is  
 25 24 just learning the theory of evolution

PAGE 252

1 00252  
 2 1 explain exactly what the  
 3 2 extraterrestrial could be.  
 4 3 I think most 15-year-olds  
 5 4 might chalk it up to maybe UFOs  
 6 5 coming down, some nonnatural  
 7 6 explanation that we have, that have  
 8 7 some super powers that we don't have.  
 9 8 That's part of -- not our natural way  
 10 9 we go about explaining things in  
 11 10 science.  
 12 11 When we don't understand  
 13 12 something or don't know anything, we  
 14 13 don't say, oh, there's this UFO that  
 15 14 probably came down and zapped it into  
 16 15 its existence.  
 17 16 Now, the supernatural  
 18 17 causes may be true and may certainly  
 19 18 be real, but we just don't entertain  
 20 19 them as ground rules within science,  
 21 20 and since they don't in science, we  
 22 21 also don't entertain them within the  
 23 22 science classrooms.  
 24 23 Q. Is the Dover School  
 25 24 District teaching religion in its

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SHEET 64 PAGE 253

1 00253  
 2 1 high school biology classes?  
 3 2 A. I'm not an expert on  
 4 3 religion, and I don't know if I could  
 5 4 even define religion for you.  
 6 5 Q. So, in other words, you  
 7 6 don't know?  
 8 7 A. I don't know.  
 9 8 Q. So by reading that  
 10 9 four-paragraph statement you don't  
 11 10 have an opinion whether Dover High  
 12 11 School is teaching religion?  
 13 12 A. I can't formulate an  
 14 13 opinion from this.  
 15 14 Q. By reading that  
 16 15 four-paragraph statement on Exhibit  
 17 16 2 -- is that correct, 2?  
 18 17 A. Yes.  
 19 18 Q. -- is Dover High School  
 20 19 presenting religious beliefs in its  
 21 20 high school biology classes?  
 22 21 A. Again, not being an expert  
 23 22 on defining what religion is, I can't  
 24 23 tell, and from my personal opinion of  
 25 24 these four paragraphs, I can't make a

PAGE 255

1 00255  
 2 1 to the resource, finds out it is  
 3 2 something that I would categorize as  
 4 3 creationism.  
 5 4 Q. There's a lot of  
 6 5 assumptions, though, you have to make  
 7 6 to get to your conclusion. Correct?  
 8 7 A. It states in the sentence  
 9 8 that something differs from Darwin's  
 10 9 view, and this something has been  
 11 10 discredited by the scientific  
 12 11 community, by the science education  
 13 12 community, and it is in this  
 14 13 paragraph, "The science community and  
 15 14 the science education community  
 16 15 leading organizations have said that  
 17 16 intelligent design is a form of  
 18 17 creationism."  
 19 18 So it states that  
 20 19 intelligent design, creationism, is  
 21 20 an explanation of the origin of life  
 22 21 that differs from the scientific  
 23 22 view.  
 24 23 Q. So, in your opinion, then,  
 25 24 a 15-year-old student hearing the

PAGE 254

1 00254  
 2 1 conclusive opinion.  
 3 2 Q. From reading those four  
 4 3 paragraphs stating -- or -- excuse  
 5 4 me -- by reading that four-paragraph  
 6 5 statement to the students is Dover  
 7 6 School District teaching creationism  
 8 7 in its high school biology classes?  
 9 8 A. Indirectly, yes.  
 10 9 Q. How is that?  
 11 10 A. Again, we go back to the  
 12 11 third paragraph, first sentence:  
 13 12 "Intelligent design is an explanation  
 14 13 of the origin of life that differs  
 15 14 from Darwin's view."  
 16 15 Now, I'm not saying that  
 17 16 sentence is accurate concerning  
 18 17 Darwin's view or not or whether it  
 19 18 should say evolution, but the point  
 20 19 is is when I read this, I see that  
 21 20 intelligent design is an explanation  
 22 21 of something that differs from the  
 23 22 scientific point of view.  
 24 23 And that something that's  
 25 24 different, when the child follows on

PAGE 256

1 00256  
 2 1 one-sentence "Intelligent design is  
 3 2 an explanation of the origin of life  
 4 3 that differs from Darwin's view,"  
 5 4 which is the statement read to them,  
 6 5 would hear intelligent design,  
 7 6 creationism?  
 8 7 A. Some yes, some no. Some  
 9 8 who are familiar with intelligent  
 10 9 design or have heard the word, yes.  
 11 10 Some who have never heard the words  
 12 11 "intelligent design," possibly not.  
 13 12 But it begs the question of who is  
 14 13 the intelligent designer?  
 15 14 Q. And, in your view,  
 16 15 intelligent design is just a  
 17 16 masquerade of creationism?  
 18 17 A. I don't know if I would use  
 19 18 the derogatory word "masquerading,"  
 20 19 but I believe it's a form of  
 21 20 creationism. As I stated previously,  
 22 21 I think intelligent design and  
 23 22 creationism are somewhat synonymous  
 24 23 and intelligent design is a form of  
 25 24 creationism.

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1 00257

2 1 Q. You had said that you

3 2 thought intelligent design was

4 3 masking itself as science. Correct?

5 4 A. Attempting to masquerade as

6 5 science in the public schools.

7 6 Q. And your view of

8 7 intelligent design is creationism?

9 8 MR. WALCZAK: You just

10 9 asked him and he just answered.

11 10 MR. WHITE: Well, I want to

12 11 hear the answer again.

13 12 THE WITNESS: I consider

14 13 intelligent design to be a form of

15 14 creationism.

16 15 BY MR. WHITE:

17 16 Q. So then in your view, then,

18 17 the reading of this four-paragraph

19 18 statement to students in the Dover

20 19 High School is teaching creationism

21 20 in that high school classroom?

22 21 A. It's a form of teaching

23 22 creationism. It may not be the best

24 23 way to teach something, but it is a

25 24 form of teaching, yes.

PAGE 258

1 00258

2 1 Q. But a form of teaching

3 2 creationism?

4 3 A. Yes.

5 4 Q. Does the professional

6 5 association for teachers and like

7 6 groups, are they the ones who decide

8 7 what's taught in a public high school

9 8 science classroom?

10 9 A. No.

11 10 Q. It's the school board that

12 11 decides what's taught, as far as the

13 12 curriculum goes. Correct?

14 13 A. My understanding is in most

15 14 states local school boards make the

16 15 decision of what is taught in their

17 16 schools.

18 17 Q. And the Dover School

19 18 District is required, as far as you

20 19 know, to follow the Pennsylvania

21 20 standards that we were looking at

22 21 previously?

23 22 A. I do not know that they are

24 23 required to follow the state

25 24 standards.

PAGE 259

1 00259

2 1 Q. Do you know whether they

3 2 are following the state standards?

4 3 A. When I did a quick

5 4 examination of the state standards

6 5 concerning evolution and the Dover

7 6 curriculum concerning evolution, I

8 7 can see some similarity between the

9 8 two.

10 9 Q. Do you see anything that

11 10 would differ between the two?

12 11 A. I did. I can't recall at

13 12 the moment, but nothing

14 13 extraordinarily devastating.

15 14 Q. So from your review,

16 15 though, the Dover School District

17 16 curriculum seems to be in compliance

18 17 with the state academic standards as

19 18 far as evolution goes. Correct?

20 19 A. Roughly, yes.

21 20 Q. Have you made any public

22 21 statements about this lawsuit? Not

23 22 to your wife. I'm talking about have

24 23 you given any speeches or any

25 24 presentations?

PAGE 260

1 00260

2 1 A. No.

3 2 Q. What religion are you, if

4 3 you have a religion?

5 4 A. Wow. I'm not an atheist.

6 5 Q. Are you anything?

7 6 A. Is that relevant to this

8 7 case?

9 8 Q. Uh-huh.

10 9 MR. WALCZAK: It's fair.

11 10 THE WITNESS: I'm an

12 11 agnostic.

13 12 BY MR. WHITE:

14 13 Q. What does that mean?

15 14 A. That when I die and there

16 15 is a God, I will be very happy, I

17 16 hope. If there isn't a God, I guess

18 17 I won't know if there's not an

19 18 afterlife. And -- so I hope there

20 19 is, but I don't know at this point.

21 20 But I'm open for evidence. I'm

22 21 keeping an open mind, as you would

23 22 say.

24 23 Q. Apparently you just said

25 24 it, too.



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SHEET 67 PAGE 265

1 00265  
 2 1 coexist, that nothing even remotely  
 3 2 close to a human didn't come on the  
 4 3 scene until about 65 million years  
 5 4 after dinosaurs, that's the science,  
 6 5 and the child says, "I understand the  
 7 6 science and I accept that it's the  
 8 7 best scientific explanation, I  
 9 8 understand the logic, I understand  
 10 9 the ground rules, and given those  
 11 10 constraints, I would conclude the  
 12 11 same thing."  
 13 12 But then the child says,  
 14 13 maybe outside the classroom, "I still  
 15 14 don't believe it. I believe for  
 16 15 religious reasons that they did  
 17 16 coexist." Then I -- and I would hope  
 18 17 that every public school biology  
 19 18 teacher would say "I respect that."  
 20 19 Q. Now, do you have any  
 21 20 metaphysical concerns -- you are  
 22 21 saying you are an agnostic -- that  
 23 22 say God is the designer of life?  
 24 23 Does that cause you any problem as  
 25 24 far as if you believe that, that you

PAGE 266

1 00266  
 2 1 just don't want to deal with it as a  
 3 2 possibility since you have now been  
 4 3 working this area of evolution for so  
 5 4 long?  
 6 5 A. To the contrary. I hope  
 7 6 that there is a God behind evolution  
 8 7 and the world we see. I want my life  
 9 8 to go on past this. I would like to  
 10 9 see my mother and father again.  
 11 10 Q. Have you ever been an  
 12 11 expert in any other cases?  
 13 12 A. No.  
 14 13 Q. How do your views as far as  
 15 14 being an agnostic affect your  
 16 15 opinions about how the theory of  
 17 16 evolution should be taught in a  
 18 17 science classroom in a public school?  
 19 18 A. I've spent a large part of  
 20 19 my professional career promoting  
 21 20 sensitivity to teachers with students  
 22 21 who -- this may be the most strongly  
 23 22 held religious point that they will  
 24 23 encounter in their, at least, science  
 25 24 career, whether it's just a class in

PAGE 267

1 00267  
 2 1 high school or whether they continue  
 3 2 on science, this may be the first  
 4 3 moment where they hear about  
 5 4 evolution.  
 6 5 Many of the students have  
 7 6 heard in church that evolution is  
 8 7 bad, it promotes all sorts of  
 9 8 terrible things, it's a lie.  
 10 9 And now in the public  
 11 10 school classroom the teachers, I  
 12 11 believe, need to be sensitive towards  
 13 12 students that find that it's not like  
 14 13 just teaching phylogenetic  
 15 14 organization or just teaching about  
 16 15 frogs. All of a sudden when they  
 17 16 bring up this subject, it hits a lot  
 18 17 of nerves that the other subjects  
 19 18 don't hit.  
 20 19 The physics realm hits very  
 21 20 few. People don't get too exercised  
 22 21 about learning trajectory. In  
 23 22 chemistry people don't get too  
 24 23 exercised about balancing equations.  
 25 24 Here we are over Dover concerning

PAGE 268

1 00268  
 2 1 evolution. It's a lightning bolt for  
 3 2 many, for parents, for principals,  
 4 3 for teachers, for -- most  
 5 4 importantly, for the children that  
 6 5 are in the classes.  
 7 6 So I think the subject  
 8 7 needs to be dealt with with the most  
 9 8 sensitivity out of any science in  
 10 9 high school.  
 11 10 Q. Were you given any  
 12 11 instructions on how to prepare your  
 13 12 expert report?  
 14 13 A. Vic gave me some  
 15 14 instructions on how to prepare, yes.  
 16 15 Q. Was that just the format of  
 17 16 it?  
 18 17 A. Yes, we went through some  
 19 18 drafts and he gave me some  
 20 19 suggestions about the form.  
 21 20 Q. Were you told about any  
 22 21 certain opinion that you should come  
 23 22 up with?  
 24 23 A. No.  
 25 24 Q. If you can go to your

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1 00269  
 2 1 expert report, which is Exhibit 1, at  
 3 2 the bottom of the first page that  
 4 3 carries over to the second page, you  
 5 4 talk about the United States National  
 6 5 Science Foundation Program Project.  
 7 6 A. Yes. Yep.  
 8 7 Q. And it says -- and you were  
 9 8 supervising practice teaching? You  
 10 9 say you are a contract evaluator for  
 11 10 various significantly-funded national  
 12 11 science education, supervised  
 13 12 practice teaching. What is an  
 14 13 evaluator?  
 15 14 A. Some national science  
 16 15 education grants go to university  
 17 16 science educators to run some sort of  
 18 17 possible activities for science  
 19 18 teachers. Often they run in the  
 20 19 millions of dollars.  
 21 20 And the NSF requires or at  
 22 21 least would like -- I'm not sure if  
 23 22 it's an absolute requirement, but I  
 24 23 believe it is -- that some recognized  
 25 24 expert in the area come in to write

PAGE 271

1 00271  
 2 1 experts from various areas and so  
 3 2 forth.  
 4 3 Another thing we do in  
 5 4 addition to that every year, some  
 6 5 version of that every year, we bring  
 7 6 in or arrange for high school  
 8 7 teachers, wherever the conference  
 9 8 happens to be located -- it is  
 10 9 different each year -- and local  
 11 10 teachers from the surrounding school  
 12 11 districts will come in and learn  
 13 12 about teaching evolution and learn  
 14 13 some evolution from the scientists  
 15 14 themselves in that area.  
 16 15 We do some other things,  
 17 16 too, but I think that's primarily  
 18 17 what I have been involved in.  
 19 18 Q. Now, the opinions stated on  
 20 19 Page 2 in the section Opinion of your  
 21 20 report here, can your opinion in this  
 22 21 case be tested objectively?  
 23 22 And your opinion here as  
 24 23 it's written is that it is -- I'm  
 25 24 quoting -- "It is my professional

PAGE 270

1 00270  
 2 1 up an evaluation of how the project  
 3 2 went, or formative evaluations also  
 4 3 along the way, evaluations of the  
 5 4 project in general.  
 6 5 I've done -- I don't  
 7 6 remember the exact number -- probably  
 8 7 four, five, six large ones.  
 9 8 Q. The Society for the Study  
 10 9 of Evolution, as a member of the  
 11 10 education committee for that group,  
 12 11 what do you do?  
 13 12 A. Many things. One of the  
 14 13 things we do is every year we put on  
 15 14 an education symposium -- generally  
 16 15 it's all day long.  
 17 16 Not always, but  
 18 17 generally -- in which we try to help  
 19 18 the people at the conference -- maybe  
 20 19 we will get a couple hundred into our  
 21 20 session, they are typically  
 22 21 university biology professors -- and  
 23 22 they want to learn some aspects about  
 24 23 teaching evolution better, and so we  
 25 24 will arrange that, we will bring in

PAGE 272

1 00272  
 2 1 opinion that the Dover Area School  
 3 2 District's policy on biology  
 4 3 instruction, as passed in October  
 5 4 2004 and implemented in January of  
 6 5 2005 is detrimental to student  
 7 6 scientific literacy." So how can  
 8 7 that opinion be tested objectively?  
 9 8 A. Who's doing the testing?  
 10 9 Q. How can anyone test your  
 11 10 opinion?  
 12 11 A. I think if you were to ask  
 13 12 science educators whether engendering  
 14 13 misconceptions in students is good  
 15 14 pedagogy, they would probably  
 16 15 disagree. If you ask them about  
 17 16 disregarding the findings of the  
 18 17 scientific community, I think they  
 19 18 would think that was bad.  
 20 19 If you ask them about  
 21 20 teachers disregarding the  
 22 21 recommendations of their national  
 23 22 professional teachers associations, I  
 24 23 would think they would think that was  
 25 24 unwise. If you asked them about

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1 00273

2 1 contradicting their teachers'

3 2 professional preparation or

4 3 professional development, I would

5 4 think they would think that was

6 5 unwise.

7 6 And I would think that by

8 7 teaching students about

9 8 misconceptions, a la intelligent

10 9 design, would be improper preparation

11 10 for post secondary education.

12 11 So given those

13 12 sub-categories, I think objectively,

14 13 as possible, the evaluators would

15 14 determine that this is detrimental to

16 15 student scientific literacy.

17 16 Q. So we are clear, then, in

18 17 your report and what you have been

19 18 talking about today, when you're

20 19 talking about the Dover --

21 20 MR. WHITE: Excuse me; can

22 21 we go off the record.

23 22 (Discussion off the

24 23 record.)

25 24 BY MR. WHITE:

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1 00275

2 1 two-sentence indent that starts

3 2 "students will be made aware of"?

4 3 A. Well, if I could see the

5 4 Dover curriculum, then I would know

6 5 for sure. I haven't memorized the

7 6 Dover curriculum, so I'm not sure

8 7 this couple sentences is the same

9 8 that's in the curriculum. I mean, it

10 9 says here it is, but I'm not sure

11 10 that it is.

12 11 Q. Well, working under the

13 12 assumption that this statement that

14 13 the biology curriculum is updated to

15 14 include the following preliminary

16 15 statement and the statement being

17 16 students would be made aware of gaps,

18 17 problems in Darwin's theory, et

19 18 cetera, and the origins of life would

20 19 not be taught, is that the curriculum

21 20 you are talking about?

22 21 A. Yes. I consider this, yes,

23 22 to be part of the policy. I

24 23 consider -- under the curriculum

25 24 where the resource is "Of Pandas And

PAGE 274

1 00274

2 1 Q. So if I understand

3 2 correctly, then, when you are talking

4 3 about the policy of the Dover School

5 4 District in your report and during

6 5 your deposition today, that is the

7 6 reading of the four-paragraph

8 7 statement to the class?

9 8 A. It's more than that. I

10 9 refer to the policy as being what I

11 10 read in the press release explaining

12 11 the policy and what I read in the

13 12 Dover curriculum and including the

14 13 pointing of students to "Of Pandas

15 14 And People" as a reference in a

16 15 science class.

17 16 Q. So I'm clear, what, then,

18 17 is the Dover policy, as far as you're

19 18 concerned, that you are basing all of

20 19 your opinions on in your report and

21 20 in your deposition today?

22 21 A. The text that's in the

23 22 curriculum.

24 23 Q. Now, if you can -- is that

25 24 on Page 1 of Exhibit 2, that

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1 00276

2 1 People," I consider part of the

3 2 policy the word "lecture" in the

4 3 curriculum, I consider part of the

5 4 policy the four-paragraph statement

6 5 and what I read in the press release

7 6 and what I've read in "Of Pandas And

8 7 People."

9 8 Q. So all of those factors you

10 9 just laid out, that's, in your view,

11 10 the policy of the school district, as

12 11 far as you forming an opinion in this

13 12 case?

14 13 A. Yes. And the reason for

15 14 that is because I don't think, to my

16 15 knowledge, any of this existed before

17 16 the policy came -- or the decision to

18 17 do this came into effect.

19 18 Q. What is it about the press

20 19 release that's a part of the policy

21 20 that you find detrimental to the

22 21 scientific literacy of students? And

23 22 that being Exhibit 2.

24 23 A. Well, it tells me that the

25 24 statement will be read to all

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1 00277

2 1 students. I don't care for the part

3 2 that the school board has noted that

4 3 there are opinions other than

5 4 Darwin's on the origin of life.

6 5 Again, I find that to be confusing

7 6 because Darwin did not postulate

8 7 virtually anything on the origin of

9 8 life other than a letter.

10 9 Q. And where is that on paper?

11 10 A. I'm sorry; it's the last

12 11 paragraph, a couple sentences up from

13 12 the bottom.

14 13 Q. On Page 2?

15 14 A. Yes.

16 15 Q. Okay.

17 16 A. I think that's it for this

18 17 document. However, also is the

19 18 communication that Vic gave me that's

20 19 in my report concerning that I

21 20 believe it was the superintendent had

22 21 instructed teachers not to answer

23 22 questions.

24 23 I state in my report that

25 24 "The Dover teachers are instructed by

PAGE 279

1 00279

2 1 the board's religious beliefs."

3 2 So how does that factor in

4 3 with your understanding of how this

5 4 policy is detrimental to the

6 5 scientific literacy of students?

7 6 A. I'm glad to see that

8 7 there's no further teaching of

9 8 intelligent design going on.

10 9 Q. Further, besides the

11 10 reading of the one sentence,

12 11 "Intelligent design is an explanation

13 12 of the origin of life that differs

14 13 from Darwin's view" at the top of

15 14 Page 2 on Exhibit 2?

16 15 A. If you are referring to the

17 16 one sentence that brings up

18 17 intelligent design, a nonscientific

19 18 discredited theory, in a science

20 19 classroom and says that it differs

21 20 from the scientific view and that if

22 21 students want to know more about this

23 22 nonscientific view that they're

24 23 learning about in the science

25 24 classroom, they should go and seek

PAGE 278

1 00278

2 1 school administration not to answer

3 2 student queries about intelligent

4 3 design."

5 4 Q. What are the teachers

6 5 supposed to do if students have

7 6 questions?

8 7 A. Are you asking what they

9 8 are supposed to do in Dover?

10 9 Q. Uh-huh. As far as you

11 10 know.

12 11 A. Well, if the students can't

13 12 get answers from the teachers,

14 13 because apparently according to --

15 14 from what's been communicated to me,

16 15 they can't, then I don't know what

17 16 the school is directing them to get

18 17 those answers to.

19 18 Q. This statement, Exhibit 2,

20 19 also says that teachers are not -- on

21 20 paragraph -- the last paragraph that

22 21 you had pointed to on Page 2 of

23 22 Exhibit 2 also says that "No teacher

24 23 will teach intelligent design,

25 24 creationism, or present his or her or

PAGE 280

1 00280

2 1 out a nonscientific textbook about

3 2 it, then yes.

4 3 Q. But those are all these

5 4 assumptions, all this nonscientific

6 5 stuff you've been listing out here?

7 6 Those are your --

8 7 A. Intelligent design has

9 8 been --

10 9 Q. Those are your assumptions

11 10 that you are bringing to this

12 11 two-sentence statement at the top of

13 12 Page 2 on Exhibit 2. Correct?

14 13 A. I don't believe it is an

15 14 unreasonable assumption whatsoever to

16 15 think that some students will have

17 16 never heard the words "intelligent

18 17 design" before they hear this. They

19 18 will not know that it's an

20 19 explanation of the origin of life.

21 20 They will not know that it is an

22 21 explanation of the origin of life

23 22 that differs from Darwin's point of

24 23 view.

25 24 They learn this after they



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1 00281  
 2 1 hear this sentence. I don't think  
 3 2 that's unreasonable at all, and I  
 4 3 would be willing to think that the  
 5 4 majority of students, that would be  
 6 5 news to them.  
 7 6 Q. But as far as all this  
 8 7 unscientific gloss you are putting on  
 9 8 it, those are the assumptions you, as  
 10 9 a Ph.D. and an expert in science  
 11 10 education, bring to the reading of  
 12 11 the two-sentence statement at the top  
 13 12 of Page 2 of Exhibit 2. Correct?  
 14 13 A. Not at all. Intelligent  
 15 14 design has been discredited by the  
 16 15 major scientific organizations and  
 17 16 the major science education  
 18 17 organizations. It is not simply me  
 19 18 who thinks that intelligent design is  
 20 19 a form of creationism.  
 21 20 Q. But the reading, what I'm  
 22 21 asking is -- and I'm talking just to  
 23 22 you. I'm not talking to all these  
 24 23 other scientists running around out  
 25 24 there. Okay?

PAGE 283

1 00283  
 2 1 the policy, okay, how is just the  
 3 2 simple reading of the four-paragraph  
 4 3 statement detrimental to the  
 5 4 scientific literacy of a student in  
 6 5 the Dover High School?  
 7 6 A. The first paragraph -- if  
 8 7 you will allow me to go paragraph by  
 9 8 paragraph.  
 10 9 Q. Sure.  
 11 10 A. The first paragraph being  
 12 11 read to the student, "The  
 13 12 Pennsylvania academic standards  
 14 13 require students to learn about  
 15 14 Darwin's theory of evolution and  
 16 15 eventually to take a standardized  
 17 16 test on which evolution is a part."  
 18 17 I don't understand the  
 19 18 pedagogical advantage to taking time  
 20 19 out of a class to say it's in the  
 21 20 Pennsylvania academic standards. I  
 22 21 would imagine many things are in the  
 23 22 Pennsylvania academic standards  
 24 23 throughout that biology class.  
 25 24 Do they read the sentence

PAGE 282

1 00282  
 2 1 When you just read this  
 3 2 statement to me on the top of Page 2,  
 4 3 Exhibit 2, and you put in all of this  
 5 4 unscientific gloss, okay, that's  
 6 5 coming from you and your knowledge,  
 7 6 correct, that someone who doesn't  
 8 7 have your knowledge may not be able  
 9 8 to insert into this two-sentence  
 10 9 statement. Am I correct on that?  
 11 10 A. Correct. I think the  
 12 11 average 15-year-old in high school  
 13 12 would say "I have never heard of  
 14 13 intelligent design, but apparently  
 15 14 it's an explanation for the origin of  
 16 15 life and that differs from Darwin's  
 17 16 view."  
 18 17 Q. I like your Darwin tie.  
 19 18 A. Thank you. I wore it in  
 20 19 honor of the day. I'm not sure it is  
 21 20 Darwin, though, but it might be  
 22 21 evolution.  
 23 22 Q. Or evolution tie; sorry.  
 24 23 Now, the reading of the  
 25 24 four-paragraph statement as part of

PAGE 284

1 00284  
 2 1 concerning areas of physics in the  
 3 2 physics courses, about areas of  
 4 3 chemistry in the chemistry course,  
 5 4 other areas of biology in this  
 6 5 biology course? But there it's  
 7 6 stated some sort of -- that you are  
 8 7 being required, we are teaching this  
 9 8 because we are required by the  
 10 9 Pennsylvania academic standards.  
 11 10 I don't understand the  
 12 11 pedagogical advantage of reading this  
 13 12 statement to students and singling  
 14 13 out evolution as the one in which  
 15 14 they are requiring students to learn.  
 16 15 And, in addition, there's a  
 17 16 big misconception there, they are  
 18 17 learning more than just about  
 19 18 Darwin's theory of evolution, they  
 20 19 are learning about evolution in  
 21 20 general. A lot of science has come  
 22 21 into play since Darwin was around  
 23 22 concerning evolution.  
 24 23 Q. So that the reading of that  
 25 24 statement is detrimental to their

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1 00285

2 1 scientific literacy of these

3 2 students?

4 3 A. I think it signals that

5 4 something is up about evolution that

6 5 they have to read this. A person

7 6 comes into the classroom, they have

8 7 to read this special document that

9 8 says something is special about

10 9 evolution and we require students to

11 10 learn about Darwin's theory of

12 11 evolution. There's the misconception

13 12 that it's just Darwin's theory.

14 13 I'm done with Paragraph 1.

15 14 Q. Continue.

16 15 A. Paragraph 2, "because

17 16 Darwin's theory is a theory --" well,

18 17 there's some confusion right there.

19 18 Darwin's theory is also a fact and

20 19 it's not brought into play.

21 20 Because -- the word "because" is

22 21 attributing something to something

23 22 else. Because it's a theory is

24 23 almost implying because it's only a

25 24 theory "it continues to be tested as

PAGE 286

1 00286

2 1 new evidence is discovered."

3 2 Well, that's the case for

4 3 all theories. That's not singling

5 4 out evolution again, and particularly

6 5 singling out just Darwin's theory,

7 6 just Darwin's theory. In fact, any

8 7 sort of mechanism of evolution since

9 8 Darwin apparently, according to this,

10 9 doesn't seem to be tested as new

11 10 evidence is discovered, or at least

12 11 it is not mentioned here.

13 12 It is Darwin's theory that

14 13 is singled out as the only theory

15 14 that is -- that continues to be

16 15 tested as new evidence is discovered.

17 16 It goes on to say that

18 17 theory is not a fact. That's

19 18 incorrect. The National Academy of

20 19 Sciences and the American Association

21 20 for the Advancement of Science have

22 21 both come out in print and say

23 22 Darwin's theory is a theory and fact,

24 23 evolution is a theory and fact. So

25 24 that's just dead wrong.

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1 00287

2 1 Continuing, "Gaps in the

3 2 theory exist for which there is no

4 3 evidence." Well, again, it's

5 4 confusing, the difference between the

6 5 occurrence of evolution and the

7 6 mechanism of evolution.

8 7 The last sentence, "A

9 8 theory is defined as a well-tested

10 9 explanation that unifies a broad

11 10 range of observations." I'm not too

12 11 worried about that. I might question

13 12 why it's brought up only in relation

14 13 to evolution.

15 14 Is this statement read to

16 15 physics students before physics

17 16 classes or chemistry students before

18 17 chemistry classes? That statement

19 18 could be anywhere, but it is read

20 19 only in relation to evolution.

21 20 I consider that entire

22 21 paragraph to be a form of attempt --

23 22 theory is mentioned, one, two, three,

24 23 four, five times in four sentences.

25 24 I think what they are doing by

PAGE 288

1 00288

2 1 reading this is confusing for the

3 2 child, probably the child's normal

4 3 assumption of what a theory is versus

5 4 a scientific definition of what the

6 5 word "theory" is.

7 6 But, again, the major

8 7 concern I have towards the last

9 8 sentence is why isn't this said about

10 9 all areas of science?

11 10 Paragraph 3, "Intelligent

12 11 design is an explanation of the

13 12 origin of life that differs from

14 13 Darwin's view." Again, as I have

15 14 stated previously, Darwin really

16 15 didn't have a publicized view on the

17 16 origin of life, that's another

18 17 misconception.

19 18 This paragraph doesn't say

20 19 anything about -- "Intelligent

21 20 design, a nonscientific view rejected

22 21 by the scientific and education

23 22 communities, is an explanation of the

24 23 origin of life." It does not say

25 24 that.

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1 00289

2 1 Being that it is read in a

3 2 science class -- being that it is

4 3 read in a science class, it's not a

5 4 great assumption to think that the

6 5 15-year-olds might think it's

7 6 actually part of the science class,

8 7 meaning science.

9 8 If it's not part of the

10 9 science class, then it should be

11 10 stated as such. And if it is part of

12 11 the science class, then a disclaimer

13 12 should come in here that it's not

14 13 science, it has been rejected as

15 14 science.

16 15 The next sentence, "The

17 16 reference book 'Of Pandas And People'

18 17 is available for students who might

19 18 be interested in gaining an

20 19 understanding of what intelligent

21 20 design actually involves." Again, a

22 21 reiteration of my same complaint from

23 22 the sentence previously.

24 23 Why are we directing kids

25 24 to a book that contains so-called

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1 00291

2 1 science class to science students who

3 2 will only cover the subject of

4 3 evolution for 19 days, according to

5 4 the Dover curriculum, and then we

6 5 tell them you can go look at this

7 6 secret science in this book, we

8 7 apparently instruct our teachers not

9 8 to answer questions about it, and

10 9 then we tell them if you want to

11 10 discuss this science, don't discuss

12 11 it with your teachers, go discuss it

13 12 with individual students and their

14 13 families.

15 14 That, to me, is almost

16 15 unbelievable that that occurs.

17 16 Q. You are talking about the

18 17 discussion of the origins of life.

19 18 Right?

20 19 A. Yes.

21 20 Q. Not the theory of

22 21 intelligent design?

23 22 A. No. But I think it

24 23 conflates the two, because the

25 24 sentence in the paragraph right above

PAGE 290

1 00290

2 1 science that's been rejected by the

3 2 scientific communities? It is being

4 3 read in a science class to science

5 4 students during science time, but yet

6 5 it's been rejected. I think that

7 6 creates great misconceptions.

8 7 The last paragraph, "With

9 8 respect to any theory, students are

10 9 encouraged to keep an open mind."

11 10 There's the famous "open mind."

12 11 Again, why is evolution singled out?

13 12 Why are students only

14 13 encouraged to keep an open mind when

15 14 it comes to the theory of evolution?

16 15 Why isn't this read for all other

17 16 theories? Why isn't this read in the

18 17 physics class and the chemistry

19 18 class?

20 19 The next sentence, "The

21 20 school leaves the discussion of the

22 21 origin of life to individual students

23 22 and their families." So, let me get

24 23 this straight.

25 24 We bring up something in a

PAGE 292

1 00292

2 1 says "Intelligent design is an

3 2 explanation of the origin of life

4 3 that differs from Darwin's view,"

5 4 implying that Darwin has a view about

6 5 the origin of life. I don't think

7 6 there's a leap there.

8 7 The next sentence, "The

9 8 school leaves the discussion of the

10 9 origins of life to the individual

11 10 students and their families." I read

12 11 that.

13 12 The last sentence states,

14 13 "As a standards-driven district,

15 14 class instruction focuses upon

16 15 preparing students to achieve

17 16 proficiency on standards-based

18 17 assessments."

19 18 Again, I just don't

20 19 understand why this sentence is

21 20 singled out to be applied only to

22 21 evolution and nothing else. Does

23 22 that mean in the physics and

24 23 chemistry class that they are not a

25 24 standards-driven district? Class

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1 00293  
 2 1 instruction does not focus upon  
 3 2 preparing students to achieve  
 4 3 proficiency on standards-based  
 5 4 assessments?  
 6 5 You mean the only place  
 7 6 that's relevant to bring this up is  
 8 7 concerning the theory of evolution?  
 9 8 Those are some of my  
 10 9 problems with those four paragraphs.  
 11 10 Q. Now, you said the  
 12 11 curriculum in Dover is 19 days long?  
 13 12 A. The unit for evolution,  
 14 13 according to the day count, is 19  
 15 14 days, where they explicitly mention  
 16 15 evolution.  
 17 16 Q. So that's 19 days -- how  
 18 17 long is a class generally in high  
 19 18 school?  
 20 19 A. Generally, they probably  
 21 20 cover biology for five hours a week.  
 22 21 If you do a quick sloppy  
 23 22 calculation, take out about three  
 24 23 months out of the year for vacations,  
 25 24 summer vacations and so forth, give

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1 00294  
 2 1 them eight hours of sleep a night,  
 3 2 they will spend less than 5 percent  
 4 3 of their time in the biology class as  
 5 4 a whole, and as far as evolution, a  
 6 5 microscopic amount, 19 days over a  
 7 6 four-year period for those students  
 8 7 who don't go on in biology.  
 9 8 Q. Compared to a 60-second  
 10 9 statement read at the start of class?  
 11 10 A. The statement is so unusual  
 12 11 that I think it will carry a lot of  
 13 12 impact. And it is strange to  
 14 13 introduce nonscience directly into a  
 15 14 science classroom and in a way that  
 16 15 is so unusual and so disruptive to  
 17 16 the normal activities of a teacher in  
 18 17 a biology classroom.  
 19 18 Q. What is science? Define it  
 20 19 for me.  
 21 20 A. It's a way of knowing,  
 22 21 It's a way of knowing that uses  
 23 22 natural explanations to explain  
 24 23 natural phenomena.  
 25 24 Q. Is it accurate to say that

PAGE 295

1 00295  
 2 1 it's a search for understanding the  
 3 2 natural world using inquiry and  
 4 3 experimentation?  
 5 4 A. I think that's part of it,  
 6 5 yes.  
 7 6 Q. How is intelligent design  
 8 7 not science?  
 9 8 A. I'm not a philosopher of  
 10 9 science. The demarcation issue is  
 11 10 primarily philosophy of science;  
 12 11 however, from a science education  
 13 12 point of view, I can say that one of  
 14 13 the things we try to teach students  
 15 14 is about the nature of science and  
 16 15 one of the ground rules, as I stated  
 17 16 previously, is methodological  
 18 17 naturalism.  
 19 18 Sometimes it is not taught  
 20 19 by those words to 15-year-old  
 21 20 children, but the idea is that the  
 22 21 only explanations that are allowed in  
 23 22 the game of science are natural  
 24 23 explanations about the natural world  
 25 24 and that there may be supernatural

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1 00296  
 2 1 causes and they certainly may exist,  
 3 2 but within the game of science, we  
 4 3 don't entertain those possibilities.  
 5 4 By the very nature  
 6 5 supernatural means above super, above  
 7 6 nature, and biology only looks and  
 8 7 science in general only looks to the  
 9 8 natural causes of natural phenomena.  
 10 9 Q. And you said you haven't  
 11 10 spoken to any of the students who  
 12 11 have gone through the biology class  
 13 12 at Dover. Correct?  
 14 13 A. No, I have not.  
 15 14 Q. Do you know how any of the  
 16 15 students have done on any  
 17 16 standardized exams in Dover with  
 18 17 regard to biology?  
 19 18 A. No.  
 20 19 (Recess taken.)  
 21 20 BY MR. WHITE:  
 22 21 Q. On Page 3 of your report,  
 23 22 Exhibit 1, the second paragraph, you  
 24 23 say: "All leading science education  
 25 24 associations and scientific



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1 00297  
 2 1 associations do agree that learning  
 3 2 about evolution is one of the most  
 4 3 important concepts, if not the most  
 5 4 important concept, in a biology  
 6 5 course and that students cannot  
 7 6 obtain a well-rounded background in  
 8 7 science without learning about  
 9 8 evolution."  
 10 9 From your review of the  
 11 10 curriculum at Dover, students are  
 12 11 being taught about evolution?  
 13 12 A. Yes.  
 14 13 Q. You had mentioned one of  
 15 14 the parts of the policy is also the  
 16 15 curriculum of the school?  
 17 16 A. Yes.  
 18 17 Q. What aspect of the  
 19 18 curriculum is detrimental to the  
 20 19 scientific literacy of students?  
 21 20 MR. WALCZAK: Can you -- if  
 22 21 you don't have a copy of the  
 23 22 curriculum, can you represent to us  
 24 23 that what's listed in this press  
 25 24 release in Exhibit 2 is in fact

PAGE 298

1 00298  
 2 1 what's in the curriculum; do you know  
 3 2 that?  
 4 3 MR. WHITE: That is my  
 5 4 understanding, it is.  
 6 5 MR. WALCZAK: Okay. So  
 7 6 we're going on the assumption --  
 8 7 MR. WHITE: What is in the  
 9 8 quote there that says on Exhibit 2,  
 10 9 Page 1, that the curriculum was  
 11 10 updated with that following  
 12 11 statement, that's my understanding of  
 13 12 what is in the curriculum.  
 14 13 MR. WALCZAK: So he will  
 15 14 answer on the assumption that this is  
 16 15 an accurate reflection of what is in  
 17 16 the curriculum since we don't have  
 18 17 the actual curriculum.  
 19 18 MR. WHITE: That's fine.  
 20 19 THE WITNESS: After all  
 21 20 that, I forgot what the question was;  
 22 21 I'm sorry.  
 23 22 BY MR. WHITE:  
 24 23 Q. What I had asked was, you  
 25 24 had said that the curriculum is one

PAGE 299

1 00299  
 2 1 of the parts of the policy as you  
 3 2 view it when you're forming your  
 4 3 opinion, and what part -- what is it  
 5 4 about the curriculum that is  
 6 5 detrimental to the scientific  
 7 6 literacy of students at the Dover  
 8 7 High School?  
 9 8 A. Well, it instructs  
 10 9 teachers here -- the curriculum is  
 11 10 read by teachers. Teachers are --  
 12 11 Q. When you say "read," you  
 13 12 mean read to the students?  
 14 13 A. No. No. Generally the  
 15 14 students don't see the curriculum.  
 16 15 Generally it's the teachers that see  
 17 16 the curriculum. And it says:  
 18 17 "Students will be made aware of gaps,  
 19 18 problems in Darwin's theory and other  
 20 19 theories of evolution, including but  
 21 20 not limited to intelligent design."  
 22 21 So we come back to all the  
 23 22 rationales I brought up previously  
 24 23 is, students are going to be made  
 25 24 aware of a nonscientific theory in a

PAGE 300

1 00300  
 2 1 science class. That's my primary  
 3 2 problem with this sentence.  
 4 3 Secondary problem with this  
 5 4 sentence is why are students not  
 6 5 being made aware of gaps -- so-called  
 7 6 gaps or problems in all theories,  
 8 7 laws, all areas of science? Why  
 9 8 again is evolution being singled out  
 10 9 here for the gap-problem issue?  
 11 10 Those are two major concerns.  
 12 11 Q. Now, do you have any  
 13 12 knowledge of teachers in the Dover  
 14 13 High School making students aware of  
 15 14 gaps and problems in Darwin's theory  
 16 15 besides whatever is stated in the  
 17 16 Miller and Levine "Biology" textbook?  
 18 17 A. No.  
 19 18 Q. Do you have any knowledge  
 20 19 of teachers in the Dover School  
 21 20 District making students aware of any  
 22 21 other theories of evolution?  
 23 22 A. No.  
 24 23 Q. And is it your knowledge  
 25 24 that the students are being made

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1 00301  
 2 1 aware of intelligent design is  
 3 2 through the four-paragraph statement  
 4 3 that was read at the start of the  
 5 4 biology course?  
 6 5 A. Explicitly, and implicitly  
 7 6 through directing them to an  
 8 7 intelligent design book.  
 9 8 Q. When you say "directing  
 10 9 them," is that the reference on Page  
 11 10 2 of Exhibit 2 that the reference  
 12 11 book "Of Pandas And People" is  
 13 12 available for students who might be  
 14 13 interested in gaining an  
 15 14 understanding of what intelligent  
 16 15 design actually involves?  
 17 16 A. Yes, the one that says  
 18 17 "gaining an understanding" read to  
 19 18 them in a biology classroom. One  
 20 19 would assume it's gaining an  
 21 20 understanding of science, and they  
 22 21 direct them to a nonscience book.  
 23 22 Q. And that's your opinion of  
 24 23 "Of Pandas And People," that it is  
 25 24 not a science book?

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1 00302  
 2 1 A. I have seen a scientific  
 3 2 organization, one of the larger  
 4 3 ones -- I can't recall at the  
 5 4 moment -- contend that the book is  
 6 5 not scientifically accurate. I have  
 7 6 heard some individual scientists  
 8 7 contend that it is not scientifically  
 9 8 accurate.  
 10 9 But what's most important,  
 11 10 at least to me, is that again it  
 12 11 brings up nonnatural causation in the  
 13 12 book, which is a ground rule of  
 14 13 science.  
 15 14 Q. You had also said that part  
 16 15 of the policy of Dover School  
 17 16 District is just that the "Of Pandas  
 18 17 And People" is being made available?  
 19 18 A. It's not so much that it's  
 20 19 being made available. That's an  
 21 20 issue to be taken up, I imagine, with  
 22 21 the local school and what they want  
 23 22 to carry in their library. The issue  
 24 23 is directing students to a nonscience  
 25 24 discredited idea that is presented as

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1 00303  
 2 1 a science within that book in the  
 3 2 middle of, at the beginning of, or at  
 4 3 the end of a science class.  
 5 4 Q. And then you said another  
 6 5 part of the policy of the school  
 7 6 district, as you understand it, is  
 8 7 the inclusion of a lecture? You said  
 9 8 something to that effect.  
 10 9 A. We don't have the  
 11 10 curriculum, the Dover curriculum, in  
 12 11 front of us, but I recall that the  
 13 12 method of instruction under the  
 14 13 method of instruction column in the  
 15 14 Dover curriculum for this is the word  
 16 15 "lecture."  
 17 16 Q. And lecture students about  
 18 17 what?  
 19 18 A. I don't know. It doesn't  
 20 19 state. Over on the far left column  
 21 20 is this statement, "Students will be  
 22 21 made aware of gaps, problems in  
 23 22 Darwin's theory and other theories of  
 24 23 evolution, including but not limited  
 25 24 to intelligent design. The origins

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1 00304  
 2 1 of life is not taught," and then over  
 3 2 to the right it says "lecture."  
 4 3 Q. Do you know whether any  
 5 4 faculty members at Dover have  
 6 5 lectured students about intelligent  
 7 6 design in their biology classes?  
 8 7 A. No.  
 9 8 Q. Now, when you reach your  
 10 9 opinions about that this policy is  
 11 10 detrimental to scientific literacy,  
 12 11 is that it definitely is detrimental  
 13 12 or it may be detrimental?  
 14 13 A. I can see it is possible  
 15 14 for a student to be directly taught  
 16 15 in a biology class that demons cause  
 17 16 colds, that the earth -- that the sun  
 18 17 goes around the earth, that plate  
 19 18 tectonics doesn't move, that whales  
 20 19 live in the desert, that shaking  
 21 20 hands causes liver disease, that  
 22 21 dinosaurs and humans coexisted, that  
 23 22 the earth is 10,000 years old.  
 24 23 And it may be possible for  
 25 24 a child to come out of that

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1 00305  
 2 1 instruction not having been  
 3 2 detrimentally affected in their  
 4 3 science career, but I think that  
 5 4 would be a rarity.  
 6 5 Q. Now, all these things you  
 7 6 just listed, would just the mere  
 8 7 mention of some of these things you  
 9 8 just listed would be detrimental to  
 10 9 the student?  
 11 10 A. I'll put one into the  
 12 11 phrase of the -- what is read to the  
 13 12 students in Dover. Dinosaur and  
 14 13 human coexistence is an explanation  
 15 14 of the life of dinosaurs and humans  
 16 15 that differs from Darwin's view.  
 17 16 Well, it's wrong concerning Darwin's  
 18 17 view, but we will overlook that for  
 19 18 the moment.  
 20 19 It's telling the students  
 21 20 in a science class about something  
 22 21 that isn't science. But we didn't  
 23 22 tell the students, by the way, this  
 24 23 is wrong. This is not science. For  
 25 24 scientific reasons, dinosaurs and

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1 00307  
 2 1 science class and then the teacher  
 3 2 can't respond.  
 4 3 Q. But you said you don't know  
 5 4 what the teacher is supposed to do  
 6 5 when the student asked a question?  
 7 6 A. Correct. All I know is  
 8 7 what I put in my expert report  
 9 8 concerning that I have been informed  
 10 9 that the teachers have been  
 11 10 instructed not to answer questions on  
 12 11 intelligent design. And then I read  
 13 12 somewhere else in the press release  
 14 13 that intelligent design will not be  
 15 14 taught.  
 16 15 Q. Where in the Dover policy  
 17 16 does it bring into question the  
 18 17 scientific consensus of evolution's  
 19 18 occurrence?  
 20 19 A. I hate to ask, but can you  
 21 20 repeat that?  
 22 21 Q. Sure.  
 23 22 A. I think I heard what you  
 24 23 said, but I'm confused.  
 25 24 Q. Where in the policy of the

PAGE 306

1 00306  
 2 1 humans did not coexist, but we read  
 3 2 it to them as if it's accurate.  
 4 3 That's not good.  
 5 4 Q. But wouldn't a student come  
 6 5 to that conclusion just by the fact  
 7 6 that the other 19 days of the biology  
 8 7 curriculum on evolution never  
 9 8 discusses this alternative, that it's  
 10 9 not an equal alternative?  
 11 10 A. I have no way of telling  
 12 11 what the students would necessarily  
 13 12 come away with in that reference.  
 14 13 They can't, according to  
 15 14 what I've learned, ask their teachers  
 16 15 any questions concerning -- for a  
 17 16 clarification, or at least they can  
 18 17 ask the teacher for clarification,  
 19 18 but the teachers have been instructed  
 20 19 not to clarify.  
 21 20 So I don't know what  
 22 21 happens to the, as you say,  
 23 22 open-minded student who asked  
 24 23 questions about intelligent design  
 25 24 since it was brought up in the

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1 00308  
 2 1 Dover School District does it bring  
 3 2 into question the scientific  
 4 3 consensus that you have stated of  
 5 4 evolution's occurrence?  
 6 5 A. Paragraph 2, the second  
 7 6 sentence, "The theory is not a fact."  
 8 7 Q. And this is on Exhibit 2?  
 9 8 A. Exhibit 2.  
 10 9 MR. WALCZAK: That's  
 11 10 Paragraph 2 of the four-paragraph  
 12 11 statement.  
 13 12 BY MR. WHITE:  
 14 13 Q. So Page 1, Exhibit 2, where  
 15 14 it says, you said, "The theory is not  
 16 15 a fact?"  
 17 16 A. Yes.  
 18 17 Q. So that brings into  
 19 18 question the scientific consensus of  
 20 19 evolution's occurrence?  
 21 20 A. Yes.  
 22 21 Q. I thought you said earlier,  
 23 22 though, that the theory is both --  
 24 23 has a factual element to it and then  
 25 24 a theoretical element?

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1 00309  
 2 1 A. Right, and this does not  
 3 2 say that. This says that theory is  
 4 3 not a fact.  
 5 4 Q. In common terms when people  
 6 5 speak about evolution, it's known as  
 7 6 an evolutionary theory. Right?  
 8 7 A. Among people in science  
 9 8 they may say plate tectonics, others  
 10 9 say plate tectonic theory.  
 11 10 Q. Now, have you reviewed the  
 12 11 "Biology" textbook by Professor  
 13 12 Miller and Levine --  
 14 13 A. Only --  
 15 14 Q. -- except from a few years  
 16 15 ago?  
 17 16 A. No.  
 18 17 Q. Do you know whether in  
 19 18 there they refer to evolution as a  
 20 19 fact?  
 21 20 A. I haven't read it and I  
 22 21 don't recall from ten years ago and  
 23 22 I'm sure the text remains the same  
 24 23 anyway.  
 25 24 Q. When you reviewed

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1 00311  
 2 1 Q. So Exhibit 2, Page 2 where  
 3 2 it talks about intelligent design is  
 4 3 an explanation of the origin of life,  
 5 4 that differs from Darwin's view;  
 6 5 Darwin had no view on the origin of  
 7 6 life other than this letter you  
 8 7 referenced?  
 9 8 A. He certainly may have had a  
 10 9 private view, he certainly had a view  
 11 10 within a letter, but he didn't posit  
 12 11 a scientific theory concerning the  
 13 12 origin of life.  
 14 13 Q. What did he say in this  
 15 14 letter, do you recall?  
 16 15 A. I don't know. I'm not a  
 17 16 historian of science.  
 18 17 I remember it was something  
 19 18 about a warm little pond scenario,  
 20 19 but that's about all I remember.  
 21 20 Q. Now, is questioning  
 22 21 evolutionary theory in a science  
 23 22 classroom in public school bad  
 24 23 pedagogy?  
 25 24 A. I think questioning of any

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1 00310  
 2 1 earlier -- I showed you the one page  
 3 2 on -- what exhibit number is that?  
 4 3 A. 4.  
 5 4 Q. 4. On Page 386 of Chapter  
 6 5 15.  
 7 6 A. Yes.  
 8 7 Q. On that page it's referred  
 9 8 to as a theory.  
 10 9 A. Yes, that is true. I hope  
 11 10 elsewhere in the book he also refers  
 12 11 to it in its factual nature, also.  
 13 12 Q. Also on that Page 386 of  
 14 13 the textbook is a summary of Darwin's  
 15 14 theory at the top?  
 16 15 A. Yes.  
 17 16 Q. Now, just clarify for me,  
 18 17 earlier you had said that Darwin  
 19 18 didn't have a theory -- was it  
 20 19 there's no theory on the origins of  
 21 20 life through Darwin?  
 22 21 A. The origin of life itself,  
 23 22 first life, Darwin had no publicized  
 24 23 theory concerning that. He wrote a  
 25 24 letter concerning it.

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1 00312  
 2 1 part of science in high school is  
 3 2 good.  
 4 3 Q. Now, does this Dover  
 5 4 policy, as you understand it to be,  
 6 5 cause a belief that there was no such  
 7 6 thing as evolution?  
 8 7 A. Exhibit 2, the second  
 9 8 paragraph, again, I'm concerned about  
 10 9 the sentence that says, "Because  
 11 10 Darwin's theory is a theory, it  
 12 11 continues to be tested as new  
 13 12 evidence is discovered. The theory  
 14 13 is not a fact."  
 15 14 It appears that we need to  
 16 15 make these points in this paragraph  
 17 16 that continue to say evolution is  
 18 17 only, it's only, it's only a theory,  
 19 18 there are gaps, there are problems,  
 20 19 but evolution is singled out again,  
 21 20 it's not for all other areas of  
 22 21 science.  
 23 22 Q. Now, if you can refer to  
 24 23 Exhibit 4, again at Page 386 of  
 25 24 Miller and Levine's textbook.



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1 00313  
 2 1 A. Yes.  
 3 2 Q. The last paragraph on that  
 4 3 page states: "Like any scientific  
 5 4 theory, evolutionary theory continues  
 6 5 to change as new data are gathered  
 7 6 and new ways of thinking arise." How  
 8 7 does that differ from the statement  
 9 8 on Exhibit 2 that Darwin's theory is  
 10 9 a theory and is not a fact?  
 11 10 A. Because Miller and Levine  
 12 11 state, like any scientific theory,  
 13 12 the statement in the policy only  
 14 13 singles out evolution.  
 15 14 Q. But a student would also be  
 16 15 reading Page 386 of Miller and  
 17 16 Levine. Correct?  
 18 17 A. Hopefully.  
 19 18 Q. Now, on Page 3 of your  
 20 19 expert report, Exhibit 1, you state  
 21 20 in the middle of the second full  
 22 21 paragraph, about halfway through it  
 23 22 says: "Due to the misinformation  
 24 23 students learn as a result of the  
 25 24 Dover policy, the students may

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1 00315  
 2 1 your expert report, you are just  
 3 2 saying that students may incorrectly  
 4 3 think, so, again, it's not a definite  
 5 4 that these concerns you have of the  
 6 5 policy may cause them to reach the  
 7 6 wrong conclusions?  
 8 7 A. As science teachers across  
 9 8 the nation will tell you, we're  
 10 9 constantly shocked at what students  
 11 10 don't learn in their classes.  
 12 11 Q. So why is that; is it  
 13 12 because students don't necessarily  
 14 13 pay attention?  
 15 14 A. No. I think changing one's  
 16 15 conceptions is difficult and one has  
 17 16 to -- research in the area tells us  
 18 17 what helps best is having some form  
 19 18 of disconfirming information,  
 20 19 realization that the data doesn't fit  
 21 20 and that their predictions don't  
 22 21 work, and that this has to be done  
 23 22 multiple times over a period of time  
 24 23 for a long change -- a long-term  
 25 24 change.

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1 00314  
 2 1 incorrectly think that the scientific  
 3 2 community and the science education  
 4 3 community have conflicting views on  
 5 4 the matter."  
 6 5 And "on the matter" refers  
 7 6 back to the learning of evolution in  
 8 7 science classrooms. Is that correct?  
 9 8 A. Yes.  
 10 9 Q. Now, the misinformation the  
 11 10 students will learn as a result of  
 12 11 the policy, is that your position  
 13 12 that intelligent design is not  
 14 13 science and reference to "Of Pandas  
 15 14 And People" is reference to a  
 16 15 nonscientific book?  
 17 16 A. That's part of it.  
 18 17 Q. What's the other part?  
 19 18 A. The other part's when I  
 20 19 went through paragraph by paragraph  
 21 20 of the four-sentence statement still  
 22 21 hold. My criticisms of them are the  
 23 22 same.  
 24 23 Q. But now on this statement  
 25 24 of your opinion here on Page 3 of

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1 00316  
 2 1 Most teachers teach it for  
 3 2 the short term because as in Dover,  
 4 3 19 days, many students revert back to  
 5 4 their misconceptions.  
 6 5 They do well on the exam,  
 7 6 they remember things and understand  
 8 7 to a certain extent short term, and  
 9 8 then as the months go by and possibly  
 10 9 a year or two go by, students,  
 11 10 ourselves, myself often revert back  
 12 11 to our prior conceptions that we  
 13 12 have.  
 14 13 Q. These, what you would call,  
 15 14 misconceptions that a student may  
 16 15 bring into a science classroom?  
 17 16 A. Correct.  
 18 17 Q. Now, is there a debate --  
 19 18 when you said there was a --  
 20 19 scientists debate the mechanisms of  
 21 20 the theory of evolution?  
 22 21 A. To my understanding, there  
 23 22 is still no consensus in the  
 24 23 scientific community as to how all  
 25 24 the mechanisms come into play

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1 00317  
 2 1 concerning the how of evolution.  
 3 2 Q. Now, you have mentioned a  
 4 3 few times today that in your opinion  
 5 4 the theory of evolution is being  
 6 5 singled out among the various  
 7 6 theories in biology. Now, you've  
 8 7 said before that you thought that  
 9 8 evolution is the main or major  
 10 9 unifying concept in science. Okay?  
 11 10 A. In biology.  
 12 11 Q. In biology; sorry. Why  
 13 12 wouldn't the main concept be the one  
 14 13 that's singled out for critical  
 15 14 analysis of all the concepts?  
 16 15 A. Why would it deserve --  
 17 16 well, you ask questions, not me.  
 18 17 There is no reason to  
 19 18 single out the major theory to have  
 20 19 any more attention paid to it as far  
 21 20 as criticism from any other theory.  
 22 21 There are many mainline theories that  
 23 22 students may critically examine.  
 24 23 Q. So is it that by  
 25 24 questioning the theory of evolution,

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1 00319  
 2 1 should be critically looked at and  
 3 2 then there was the for-example  
 4 3 parenthetical in which evolution was  
 5 4 one of a short laundry list of  
 6 5 theories --  
 7 6 MR. WALCZAK: I'm sorry;  
 8 7 are you talking about Dover or the PA  
 9 8 standards?  
 10 9 THE WITNESS: The  
 11 10 Pennsylvania standards.  
 12 11 MR. WALCZAK: And your  
 13 12 question was about Dover. I'm sorry;  
 14 13 it's getting late in the day.  
 15 14 THE WITNESS: No. You're  
 16 15 right. You're right.  
 17 16 I do not know whether  
 18 17 somebody goes around and reads a  
 19 18 statement concerning other areas of  
 20 19 science at Dover. I suspect that's  
 21 20 not the case by the reaction -- by  
 22 21 the letter from some of the teachers  
 23 22 to the superintendent that that is  
 24 23 not the case.  
 25 24 BY MR. WHITE:

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1 00318  
 2 1 that students are being harmed with  
 3 2 their scientific development?  
 4 3 A. It's that somehow evolution  
 5 4 is being presented as an inferior  
 6 5 science. We question evolution, but  
 7 6 we don't question these other  
 8 7 theories.  
 9 8 We tell the students, "Make  
 10 9 sure you question evolution," but  
 11 10 when we get to other theories, we  
 12 11 don't have a special statement with  
 13 12 somebody walking into a classroom, we  
 14 13 don't have a curriculum line on there  
 15 14 that students being made aware of  
 16 15 alternate so-called scientific  
 17 16 theories, and then say, "By the way,  
 18 17 we need to criticize the gaps and  
 19 18 problems with this theory, also."  
 20 19 Q. Now, do you know for a fact  
 21 20 that Dover School District is not  
 22 21 singling out any other theories in  
 23 22 its curriculum for its students?  
 24 23 A. I saw in the Dover  
 25 24 curriculum the overall that theories

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1 00320  
 2 1 Q. So my understanding, then,  
 3 2 your position is and your opinion is  
 4 3 the reading of the four-paragraph  
 5 4 statement to the students, the fact  
 6 5 that "Of Pandas And People" is  
 7 6 available as a reference tool if a  
 8 7 student wants to look at it, this  
 9 8 statement on Exhibit 2 that the  
 10 9 curriculum was modified to say that  
 11 10 people will be -- students will be  
 12 11 made aware of this thing, so these  
 13 12 factors put-together puts in the mind  
 14 13 of a student that evolution is an  
 15 14 inferior theory?  
 16 15 A. It puts into the mind --  
 17 16 put is a bad word. I don't think  
 18 17 children's minds are vessels in which  
 19 18 we just simply pour knowledge.  
 20 19 I think it facilitates a  
 21 20 misconception that there is something  
 22 21 special about evolution, it's a  
 23 22 special science, it needs special  
 24 23 considerations, we must handle it  
 25 24 with care, we must be extra critical

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1 00321  
 2 1 with evolution because it has some  
 3 2 problems, it has gaps. We don't  
 4 3 mention that with the other sciences.  
 5 4 We mention it with evolution.  
 6 5 I think students will  
 7 6 notice that. I think students will  
 8 7 notice that special treatment in a  
 9 8 stranger coming into the class will  
 10 9 read it. I think students will  
 11 10 notice that there's a special book  
 12 11 somewhere on the campus that they are  
 13 12 encouraged to go see if they want  
 14 13 greater understanding about this  
 15 14 alternative view to the cornerstone  
 16 15 of modern biology.  
 17 16 I think students will find  
 18 17 it extraordinarily strange that their  
 19 18 teachers can't talk about this that  
 20 19 was just read to them in a science  
 21 20 classroom.  
 22 21 Yes, I think this will be a  
 23 22 monumental event in the student's day  
 24 23 or week in the biology class.  
 25 24 I don't think it happens in

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1 00323  
 2 1 themselves don't like this activity  
 3 2 that's going on.  
 4 3 Q. Now, the work that you  
 5 4 mentioned before of Professor Behe,  
 6 5 Demski with regard to intelligent  
 7 6 design, do you view that as  
 8 7 scientific work?  
 9 8 A. I don't have the expertise  
 10 9 to adjudicate whether all of their  
 11 10 work is scientific or not. My  
 12 11 understanding of the ground rules of  
 13 12 science is that we have  
 14 13 methodological naturalism. I read in  
 15 14 their books that they do not believe  
 16 15 this is the only ground rule and that  
 17 16 in certain cases this ground rule  
 18 17 isn't necessarily applicable.  
 19 18 Everywhere else in science  
 20 19 I see that it is always applicable,  
 21 20 in my limited experience in science,  
 22 21 having looked at college science  
 23 22 textbooks, high school textbooks,  
 24 23 read the positions of the scientific  
 25 24 associations and the scientific

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1 00322  
 2 1 the physics class. I don't think it  
 3 2 happens in the biology class. I  
 4 3 don't think it happens in the rest of  
 5 4 the biology curriculum.  
 6 5 Q. So in your opinion this  
 7 6 one-minute statement, and all these  
 8 7 other factors that are in the policy,  
 9 8 is going to have that much of a  
 10 9 detrimental impact on the education  
 11 10 of students in the Dover High School  
 12 11 classroom?  
 13 12 A. I think it could. I think  
 14 13 it's greatly unique. I have no idea  
 15 14 why we're pretending that this is  
 16 15 science to students, and I have no  
 17 16 idea why we would present something  
 18 17 as science to students and then  
 19 18 instruct our teachers not to talk  
 20 19 about it.  
 21 20 I think students will see  
 22 21 this unusualness of the normal  
 23 22 procedures that are going on with the  
 24 23 class. They may even be perceptive  
 25 24 enough to see that the teachers

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1 00324  
 2 1 education organizations.  
 3 2 So in combination with  
 4 3 reading what comes from the  
 5 4 scientific association saying it is  
 6 5 not science, hearing statements that  
 7 6 there is no body of literature  
 8 7 concerning intelligent design in the  
 9 8 relevant scientific literature tells  
 10 9 me -- gives me every indication that  
 11 10 this should not be taught.  
 12 11 And, in fact, sometimes the  
 13 12 major organizations, again the AAAS  
 14 13 and the NAS, come out directly and  
 15 14 state "It is not science." This is  
 16 15 enough of an indication to me that  
 17 16 it's not science.  
 18 17 Q. On Page 5 and 6 of Exhibit  
 19 18 1, your report, which dovetails what  
 20 19 you were just saying now as far as  
 21 20 the scientific community, towards the  
 22 21 latter part of Page 5 you give a  
 23 22 couple examples, one being the  
 24 23 American Association for the  
 25 24 Advancement of Science, that the

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1 00325  
 2 1 intelligent design theory lacks  
 3 2 scientific warrant?  
 4 3 A. Yes.  
 5 4 Q. Okay. And makes it  
 6 5 improper to include as part of a  
 7 6 science education. And your position  
 8 7 is that the fact that this  
 9 8 four-paragraph statement is made to  
 10 9 students and that "Of Pandas And  
 11 10 People" is available if anyone wants  
 12 11 to look at it, that's including  
 13 12 intelligent design as part of science  
 14 13 education in Dover?  
 15 14 A. Yes.  
 16 15 Q. Now, the next page, Page 6,  
 17 16 you then go on with another example  
 18 17 of the NAS. And what is the NAS?  
 19 18 A. National Academy of  
 20 19 Sciences.  
 21 20 Q. And this is a statement of  
 22 21 the current academy president. Who  
 23 22 is that, the current academy  
 24 23 president you are talking about here?  
 25 24 A. Bruce Alperis.

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1 00327  
 2 1 students are being directed to go  
 3 2 look at.  
 4 3 Q. Do you know from your  
 5 4 experience and the teaching of  
 6 5 science education how many times  
 7 6 students will take such suggestions  
 8 7 from their teachers and go and look  
 9 8 at the "Of Pandas And People" book or  
 10 9 any other book that a 9th grade  
 11 10 teacher tells them to look at if it's  
 12 11 not required?  
 13 12 A. Very few; however, given  
 14 13 the extraordinary handling of this  
 15 14 particular event, I would think maybe  
 16 15 it would be the thing to do. The  
 17 16 teacher won't answer questions. The  
 18 17 assistant superintendent comes in the  
 19 18 room.  
 20 19 We find out it's a theory  
 21 20 concerning something about an  
 22 21 intelligence in the universe and --  
 23 22 that made all this stuff, and there's  
 24 23 a book. And it's pandas, it sounds  
 25 24 really nice, too, pandas, and people,

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1 00326  
 2 1 Q. And in this statement on  
 3 2 Pages 5 and 6 of your report say  
 4 3 that -- quoting Mr. Alperis --  
 5 4 "Opponents of evolution assert that  
 6 5 the scientific justification for  
 7 6 evolution is lacking when in fact the  
 8 7 occurrence of evolution is supported  
 9 8 by overwhelming evidence.  
 10 9 Legislators and school boards insert  
 11 10 wording into laws, lesson plans and  
 12 11 textbooks mandating that evolution be  
 13 12 taught as a controversial explanation  
 14 13 of life's history, though no such  
 15 14 characterization is scientifically  
 16 15 warranted."  
 17 16 How does the Dover policy  
 18 17 characterize evolution as a  
 19 18 controversial explanation of life's  
 20 19 history?  
 21 20 A. It -- the book "Of Pandas  
 22 21 And People" present it as such.  
 23 22 Q. Just that "Of Pandas And  
 24 23 People" is a reference book?  
 25 24 A. It's a reference book that

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1 00328  
 2 1 and it's there for us to go look at.  
 3 2 I think you might have more students  
 4 3 than ever.  
 5 4 If you were referring them  
 6 5 to some typical biology book, biology  
 7 6 reference book, I think you'd have  
 8 7 less students going to that than you  
 9 8 will have go to the "Of Pandas And  
 10 9 People" book because of the unusual  
 11 10 nature of the suggestion.  
 12 11 Q. The "Of Pandas And People"  
 13 12 book is about 165 or so pages long.  
 14 13 Do you think students will actually  
 15 14 go to a reference library and read  
 16 15 the book?  
 17 16 A. No.  
 18 17 Q. Now, when you talk on your  
 19 18 expert report about faculty members,  
 20 19 teachers, it's my reading of it that  
 21 20 they are being forced to disregard  
 22 21 the recommendations of their  
 23 22 professional associations through  
 24 23 this policy. Is that an accurate  
 25 24 interpretation of your opinion?



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1 00329  
 2 1 A. What paragraph are you on?  
 3 2 Q. I'm on Page 6, Paragraph  
 4 3 No. 3 that you have.  
 5 4 A. Yes.  
 6 5 Q. You are talking about the  
 7 6 policy requires students or -- excuse  
 8 7 me -- the policy requires science  
 9 8 teachers to disregard recommendations  
 10 9 of their professional associations,  
 11 10 teacher associations?  
 12 11 A. Yes.  
 13 12 Q. So your view, then, is this  
 14 13 policy is compelling faculty to  
 15 14 disregard the recommendations of  
 16 15 their teacher associations?  
 17 16 A. The policy in the  
 18 17 curriculum states students will be  
 19 18 made aware of intelligent design.  
 20 19 The four paragraphs bring  
 21 20 up intelligent design, and here in  
 22 21 the NABT, which stands for the  
 23 22 National Association of Biology  
 24 23 Teachers, official statement on  
 25 24 evolution states that "Explanation's

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1 00331  
 2 1 boards, I couldn't answer that  
 3 2 question.  
 4 3 Q. What about here in Dover;  
 5 4 do you know if teachers have to  
 6 5 follow Dover policy?  
 7 6 A. I do not. I do not.  
 8 7 Q. And your view, then, by  
 9 8 pointing to this statement from the  
 10 9 National Association of Biology  
 11 10 Teachers, is that intelligent design  
 12 11 is lumped together with creation  
 13 12 science, scientific creationism,  
 14 13 young earth theory, they're all  
 15 14 basically the same?  
 16 15 A. I believe intelligent  
 17 16 design is a type of creationism, yes.  
 18 17 Q. Do you have any  
 19 18 publications that you have done with  
 20 19 regard to intelligent design?  
 21 20 A. The entire publication?  
 22 21 Q. Yes.  
 23 22 A. No.  
 24 23 Q. Do you have parts of your  
 25 24 publication besides that defending

PAGE 330

1 00330  
 2 1 are ways of knowing that invoke  
 3 2 nonnaturalistic or supernatural  
 4 3 events or beings, whether creation  
 5 4 science, scientific creationism,  
 6 5 intelligent design theory, inert  
 7 6 theory or similar designations are  
 8 7 outside the realm of science and not  
 9 8 part of a valid science curriculum."  
 10 9 Q. How many teachers at the  
 11 10 Dover High School are members of the  
 12 11 National Association of Biology  
 13 12 Teachers?  
 14 13 A. I don't know.  
 15 14 Q. Teachers are required to  
 16 15 comply with the views of professional  
 17 16 science teacher associations?  
 18 17 A. Did you say compelled?  
 19 18 Q. Are they required to follow  
 20 19 any recommendations of professional  
 21 20 teacher associations?  
 22 21 A. No.  
 23 22 Q. Are teachers required to  
 24 23 follow policies of school boards?  
 25 24 A. There are so many school

PAGE 332

1 00332  
 2 1 evolution that deals with intelligent  
 3 2 design?  
 4 3 A. I may have; I can't recall,  
 5 4 but it would be minor.  
 6 5 MR. WALCZAK: I think if  
 7 6 you look earlier in the transcript,  
 8 7 you will get some answers there. I  
 9 8 think he listed two or three others.  
 10 9 BY MR. WHITE:  
 11 10 Q. Later on in this paragraph,  
 12 11 again on Page 6 of your report, it's  
 13 12 now a quote from the National Science  
 14 13 Teachers Association. That's the  
 15 14 NSTA?  
 16 15 A. Yes.  
 17 16 Q. Just as a side, are you a  
 18 17 member of these groups, the National  
 19 18 Association of Biology Teachers and  
 20 19 the National Science Teachers  
 21 20 Association?  
 22 21 A. I have been members of  
 23 22 virtually everything or possibly all  
 24 23 of them mentioned in my report at one  
 25 24 time or another. I'm not exactly

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1 00333  
 2 1 sure when my membership runs out and  
 3 2 when I reup, so there may be some  
 4 3 gaps in my membership.  
 5 4 Q. Besides that group you had  
 6 5 mentioned out of Berkeley where you  
 7 6 are on the board as of this February,  
 8 7 March of this year, are you a member  
 9 8 of a board of any of these  
 10 9 associations that you have listed in  
 11 10 your report?  
 12 11 MR. WALCZAK: Are you  
 13 12 asking now or ever?  
 14 13 MR. WHITE: Now and then  
 15 14 ever.  
 16 15 THE WITNESS: Not  
 17 16 currently. I've been members of  
 18 17 various committees within these  
 19 18 organizations.  
 20 19 BY MR. WHITE:  
 21 20 Q. Are you currently a member  
 22 21 of any committee of these  
 23 22 organizations?  
 24 23 A. The Society for the Study  
 25 24 of Evolution that we mentioned

PAGE 335

1 00335  
 2 1 this statement that is read to the  
 3 2 students, the four-paragraph  
 4 3 statement, and the reference to "Of  
 5 4 Pandas And People" in the library?  
 6 5 A. I think what I have defined  
 7 6 as the policy or you and I have  
 8 7 defined as the policy in total  
 9 8 diminishes the study of evolution in  
 10 9 Dover.  
 11 10 Q. And, in your opinion, the  
 12 11 mentioning of intelligent design as  
 13 12 part of the policy and having the  
 14 13 book in the library "Of Pandas And  
 15 14 People," which students can or cannot  
 16 15 look at, is promoting nonscientific  
 17 16 views?  
 18 17 A. The policy promotes  
 19 18 nonscientific views in a science  
 20 19 classroom.  
 21 20 Q. So the answer is yes?  
 22 21 A. Yes.  
 23 22 Q. Are you aware of any new  
 24 23 scientific idea that when it comes  
 25 24 out is not met with controversy?

PAGE 334

1 00334  
 2 1 earlier.  
 3 2 I don't believe so, but I  
 4 3 may be wrong. To the best of my  
 5 4 recollection at this moment, there's  
 6 5 not another committee, but I could be  
 7 6 wrong.  
 8 7 Q. Well, later on -- and again  
 9 8 the same paragraph we're talking  
 10 9 about, Page 6 from the National  
 11 10 Science Teachers Association -- it  
 12 11 says that "Administrators also should  
 13 12 support teachers against pressure to  
 14 13 promote nonscientific views or to  
 15 14 diminish or eliminate the study of  
 16 15 evolution."  
 17 16 Now, in the Dover School  
 18 17 District has the study of evolution  
 19 18 been eliminated?  
 20 19 A. No.  
 21 20 Q. In the Dover School  
 22 21 District has the study of evolution  
 23 22 been diminished?  
 24 23 A. In a way.  
 25 24 Q. And is it just because of

PAGE 336

1 00336  
 2 1 A. It will be a nonexpert  
 3 2 answer since I'm not a scientist.  
 4 3 Q. Well, let's keep it in your  
 5 4 expertise. In the teaching of  
 6 5 science education.  
 7 6 MR. WALCZAK: I'm sorry;  
 8 7 what's the question?  
 9 8 MR. WHITE: The question  
 10 9 is, in his area of expertise, are  
 11 10 there any new scientific ideas that  
 12 11 are not met with controversy?  
 13 12 THE WITNESS: To my  
 14 13 recollection, most are met with  
 15 14 controversy.  
 16 15 BY MR. WHITE:  
 17 16 Q. From your expertise or just  
 18 17 from your reading as a person in the  
 19 18 area of evolution, et cetera, when  
 20 19 Darwin came out with his theory, how  
 21 20 was that received by the governing  
 22 21 scientific community?  
 23 22 A. It was received rather well  
 24 23 in the scientific community. It was  
 25 24 the community at large had much

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SHEET 85 PAGE 337

1 00337  
 2 1 bigger problems.  
 3 2 Q. When you say "community" --  
 4 3 A. The nonscientific  
 5 4 community, the lay public.  
 6 5 Q. Was his theory, though, in  
 7 6 competition with any other existing  
 8 7 scientific theory at the time?  
 9 8 A. I don't know if it was the  
 10 9 major theory of the time, but Lamarck  
 11 10 had postulated that life on earth had  
 12 11 evolved over time, and Darwin came  
 13 12 along and documented that more and  
 14 13 then came up with a possible  
 15 14 mechanism of natural selection.  
 16 15 Q. It's also your opinion,  
 17 16 from what I understand, is that the  
 18 17 policy as you've described it to me  
 19 18 of the Dover School District is going  
 20 19 to cause an improper preparation for  
 21 20 post secondary science education for  
 22 21 students?  
 23 22 A. Yes.  
 24 23 Q. Okay. Explain your  
 25 24 reasoning on this. You have students

PAGE 339

1 00339  
 2 1 science class.  
 3 2 Now they go on to college.  
 4 3 Let's say they are not majoring in  
 5 4 science at all, but they take a  
 6 5 required science course for some  
 7 6 other major. A student starts  
 8 7 talking to other students or raises  
 9 8 their hand in the class, "What about  
 10 9 this alternative theory, you know,  
 11 10 this intelligent design?"  
 12 11 Everyone in the class says,  
 13 12 "What alternative theory? What's  
 14 13 this intelligent design? I never  
 15 14 heard of it."  
 16 15 "Well, it's supposed to be  
 17 16 an alternative theory. You are  
 18 17 supposed to keep, as you say, an open  
 19 18 mind about this alternative theory,"  
 20 19 and so forth.  
 21 20 The professor in the class,  
 22 21 if he or she is a biologist, would  
 23 22 ask, "But that's not science. They  
 24 23 were really teaching that in a  
 25 24 science class at your school; you

PAGE 338

1 00338  
 2 1 who are in, you know, 9th grade, they  
 3 2 hear the one-minute statement read to  
 4 3 them, if they are in the class, they  
 5 4 can or cannot, if they want to, go  
 6 5 look at a book, that this is going to  
 7 6 be detrimental to them as they move  
 8 7 on in their academic career?  
 9 8 A. They learned in high  
 10 9 school, or at least the Dover policy  
 11 10 apparently wants them to learn in  
 12 11 their high school biology class, that  
 13 12 there's an alternative theory to  
 14 13 evolution, and that's intelligent  
 15 14 design. Then they are encouraged to  
 16 15 take a look at a book that is located  
 17 16 somewhere at the school. Whether or  
 18 17 not they go see it is another  
 19 18 argument.  
 20 19 Let's assume on the first  
 21 20 case that they don't go see it.  
 22 21 There is this competing view that is  
 23 22 very secretive that the teachers  
 24 23 apparently can't respond, and the  
 25 24 teacher doesn't teach it in the

PAGE 340

1 00340  
 2 1 heard about this in a science class  
 3 2 in your school; they directed you to  
 4 3 a nonscience textbook about this in  
 5 4 your science class in high school?\*"
 

I think that badly prepares  
 a student when they arrive at college  
 to be stating that something is  
 science when virtually everyone at  
 the college or university, unless  
 it's a nonsecular college or  
 university, will be saying that's not  
 science. I'm assuming we are going  
 to a secular university.

If we go to a Christian  
 college or university, then it  
 depends. Some Christian colleges and  
 university accept intelligent design,  
 other ones of them do not.

But if it is a secular  
 college or university, they have been  
 ill prepared, and they have also, and  
 most importantly, been given the idea  
 that science entertains possible  
 supernatural causation.

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1 00341

2 1 So even if they don't take

3 2 a biology class, they go into a

4 3 physics course, a chemistry course,

5 4 physics for nonmajors, chemistry for

6 5 nonmajors, and they start saying,

7 6 "Well, what about supernatural causes

8 7 here? What about nonnaturalistic

9 8 causes?" Maybe it is not even

10 9 related to evolution, just science in

11 10 general.

12 11 The instructors there will

13 12 have to say "You have a

14 13 misconception. You have a

15 14 misconception that you need to get

16 15 over because that's not accurate

17 16 science, that's not the ground rules

18 17 for science."

19 18 And now we've got

20 19 university professors and teaching

21 20 assistants who go, "Well, we have a

22 21 student here who has a very

23 22 significant misconception that needs

24 23 to be expunged."

25 24 Q. And all of that will happen

PAGE 343

1 00343

2 1 Q. You don't have any

3 2 15-year-olds to deal with at home?

4 3 A. Not yet. I talk to a lot

5 4 of parents who do.

6 5 Q. Now, what is your opinion,

7 6 then, on Exhibit 2 on Page 2 where

8 7 after the four-paragraph statement is

9 8 listed, it states here: "The

10 9 foregoing statements are developed to

11 10 provide a balanced view and not to

12 11 teach or present religious beliefs?"

13 12 And then if I can then

14 13 refer you also to Page 1 of Exhibit 2

15 14 and the paragraph that mentions the

16 15 donation of the 60 books "Of Pandas

17 16 And People" --

18 17 A. Yes.

19 18 Q. -- it just says that the

20 19 book is not required text, but in an

21 20 effort to present a balanced

22 21 curriculum, the book is made

23 22 available to all students who wish to

24 23 review it and the ideas that are

25 24 presented in the text.

PAGE 342

1 00342

2 1 just from the policy in Dover, in

3 2 your opinion?

4 3 A. The policy in Dover

5 4 apparently is there for a reason, and

6 5 from the best I can tell is it is to

7 6 change the definition of science to

8 7 the students and introduce a

9 8 nonscientific way of knowing into a

10 9 science class, and it's done in a

11 10 very dramatic, unusual fashion.

12 11 I think a lot of students

13 12 will remember the topic the teachers

14 13 can't talk about. I think

15 14 15-year-olds care more about what

16 15 they find out the teacher can't talk

17 16 about than what the teacher can talk

18 17 about.

19 18 Q. Do you have any children?

20 19 A. I've been around a lot.

21 20 Q. Is that a yes?

22 21 A. That's a no.

23 22 Q. A no. So you don't have

24 23 any --

25 24 A. Not yet.

PAGE 344

1 00344

2 1 How does this attempt to

3 2 provide a balanced view and to

4 3 present a balanced curriculum play

5 4 into your opinion regarding the

6 5 detriment to the scientific education

7 6 of the students?

8 7 A. The balance, the so-called

9 8 balance, of this policy is a balance

10 9 between science and religion. It's

11 10 between a balance between science and

12 11 nonscience, it's a balance between

13 12 recognized mainstream science and

14 13 rejected, discredited science.

15 14 That's the balance. It would be like

16 15 balancing, again, germ theory with

17 16 the demon possession.

18 17 I wouldn't want referenced

19 18 as a balanced approach the King James

20 19 Bible with the biology textbook,

21 20 either, to have balanced approaches.

22 21 If you take a literal reading of

23 22 Genesis -- if, big if -- the world

24 23 was basically, and most things we

25 24 see, created in six days.



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1 00345

2 1 That might be a balanced

3 2 view to teaching evolution, but it's

4 3 teaching a religious point of view in

5 4 balance with a scientific point of

6 5 view and that should not be done

7 6 within a science classroom. It can

8 7 certainly be done elsewhere at the

9 8 school.

10 9 Q. And that goes back to your

11 10 view that intelligent design is

12 11 teaching religion?

13 12 A. I think most 15-year-olds

14 13 will assume that an intelligent

15 14 designer -- and you have things

16 15 abruptly appearing according to

17 16 Pandas Page 99 and 100 -- is some

18 17 form of deity, or possibly a UFO

19 18 supreme being somewhere moving

20 19 around.

21 20 MR. WHITE: Why don't we

22 21 take a short break, and then we will

23 22 be wrapping it up.

24 23 MR. WALCZAK: Okay.

25 24 (Recess taken.)

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1 00347

2 1 that's being truly debated seriously

3 2 within the scientific community, we

4 3 recommend that you teach this, become

5 4 a part of mainline science, there's a

6 5 healthy consensus around it in the

7 6 scientific community and they start

8 7 teaching at the universities and

9 8 colleges and say to the high schools,

10 9 "By the way, you should start

11 10 preparing these students ahead of

12 11 time. Let them know about this

13 12 intelligent design so that when they

14 13 get here, you know, they know

15 14 something," and people who graduate

16 15 and don't go to college or university

17 16 will know something about this

18 17 competing scientific theory, then

19 18 yes.

20 19 Q. So only at that point,

21 20 though, should intelligent design

22 21 even be mentioned in a public school?

23 22 A. Let me answer it this way:

24 23 Even if intelligent design were

25 24 accepted as a science but all the

PAGE 346

1 00346

2 1 BY MR. WHITE:

3 2 Q. Just to wrap up here, so a

4 3 lot of the assumptions you make to

5 4 support your opinion is that

6 5 intelligent design is not science.

7 6 Correct?

8 7 A. Correct.

9 8 Q. And that intelligent design

10 9 is the equivalent of creation

11 10 science?

12 11 A. I think it's a type of

13 12 creation science.

14 13 Q. Or a type of creation

15 14 science.

16 15 Now, if those assumptions

17 16 are shown to be incorrect, then your

18 17 opinion is incorrect?

19 18 A. Is that a question?

20 19 Q. Yes.

21 20 A. If the leading scientific

22 21 communities and the leading science

23 22 education communities and there's a

24 23 body of literature, they report that

25 24 intelligent design is a science

PAGE 348

1 00348

2 1 other parameters about it that exist

3 2 right now were still in play; for

4 3 example, no body of literature to

5 4 speak of in the relevant literature,

6 5 it is not being taught at the

7 6 universities and colleges, secular,

8 7 you don't hear about it when you go

9 8 to the scientific conferences,

10 9 there's not federal, state and other

11 10 sorts of secular funding sources for

12 11 the research, on and on, then it

13 12 still shouldn't be taught, because

14 13 it's such an obscure science.

15 14 High schools primarily

16 15 teach mainline science because

17 16 there's very limited amount of time,

18 17 a lot of material to cover, and we

19 18 are talking about 15-year-old

20 19 children.

21 20 Q. Is it your understanding

22 21 that intelligent design is being

23 22 taught in religious high schools?

24 23 A. I hear many Christian high

25 24 schools that talk about various forms

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SHEET 88 PAGE 349

1 00349

2 1 of creationism, and depending on the

3 2 type of Christian school it is, some

4 3 would teach young earth creationism

5 4 only and say that intelligent design

6 5 is too liberal of a definition of

7 6 creationism. Others would teach an

8 7 old earth, et cetera.

9 8 Q. Now, those students, when

10 9 they graduate from their prospective

11 10 religious high school and move on to

12 11 colleges, has their scientific

13 12 education been harmed?

14 13 A. Some. Many college

15 14 professors report that they have

16 15 students who contend that evolution

17 16 is bad and contend that, for example,

18 17 dinosaurs and humans coexisted, that

19 18 the earth is 10,000 years old; hasn't

20 19 the professor heard about intelligent

21 20 design, don't you know about this

22 21 form of science, and I don't -- I

23 22 can't say that a student has been

24 23 deficient directly because of

25 24 learning an intelligent design.

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1 00351

2 1 A. I would assume, and the

3 2 ones I have spoken with do feel that

4 3 science should, and in many cases

5 4 they believe does, entertain

6 5 supernatural causes and then they

7 6 find out when they are in the secular

8 7 university that that is wrong, it

9 8 does not, except for possibly a

10 9 fringe group of people who call

11 10 themselves intelligent design

12 11 scientists.

13 12 Q. And then what happens with

14 13 those students once they realize

15 14 these matters are just raised?

16 15 A. I imagine they have to go

17 16 through some cognitive shift. They

18 17 probably have some disequilibrium

19 18 about thinking that this was

20 19 accurate, I thought this was accurate

21 20 for many years, teachers taught me

22 21 about this, and now all of a sudden I

23 22 don't even hear it at the university,

24 23 in fact, I hear many things counter

25 24 to that at the university.

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1 00350

2 1 The only way I would be

3 2 able to structure a research -- an

4 3 acceptable research in that sort of

5 4 area would be to randomly assign, say

6 5 if we had ten high school students,

7 6 five of them -- well, I would want

8 7 large numbers, a couple hundred.

9 8 I would randomly assign a

10 9 hundred of them to learn about

11 10 intelligent design, the other half do

12 11 not learn about intelligent design,

13 12 send them off to college, the same

14 13 college, of course, the same

15 14 instructors and all that, and see if

16 15 there's a difference, statistically

17 16 significant difference.

18 17 But all of that is

19 18 incapable of doing due to ethical

20 19 considerations.

21 20 Q. But those students who go

22 21 through the religious schools learn

23 22 intelligent design, creationism, et

24 23 cetera, is that education detrimental

25 24 to their scientific literacy?

PAGE 352

1 00352

2 1 And now we are having --

3 2 now they would have the problem of

4 3 having to reverse what they thought

5 4 was scientifically accurate to a

6 5 different view.

7 6 If that's what we wanted to

8 7 do, we should teach -- with all due

9 8 respect to those who agree with

10 9 intelligent design, we should teach

11 10 all sorts of fiction in high school

12 11 because it really wouldn't matter,

13 12 they can go on to university or

14 13 college and be re-trained anyway.

15 14 And I'm not stating that

16 15 intelligent design is fiction, it is

17 16 just not science.

18 17 Q. Now, the students that you

19 18 are talking about here that go to the

20 19 religious schools, you are working

21 20 the assumption that they are not also

22 21 being taught evolution. Correct?

23 22 A. There are many

24 23 possibilities here. One possibility

25 24 is they are being taught evolution

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1 00353  
 2 1 and intelligent design and the  
 3 2 student decides which one is most  
 4 3 accurate, which is very strange  
 5 4 because one is a scientific view and  
 6 5 one is not a scientific view, but in  
 7 6 any case, that's one possibility.  
 8 7 The other possibility is  
 9 8 they are being taught both and being  
 10 9 shown that evolution is bad and  
 11 10 intelligent design is good, that's  
 12 11 another possibility. There are other  
 13 12 permutations concerning this also,  
 14 13 but those are the two most popular.  
 15 14 Q. Now, do you know whether  
 16 15 people that believe in the theory of  
 17 16 intelligent design also believe in a  
 18 17 lot of the concepts of evolution?  
 19 18 A. From what I read, a lot of  
 20 19 them do, yes.  
 21 20 Q. So what is the big  
 22 21 difference then, in your view,  
 23 22 between the theory of intelligent  
 24 23 design and the theory of evolution?  
 25 24 A. Nonnaturalistic

PAGE 355

1 00355  
 2 1 don't know -- maybe in your  
 3 2 laboratory and your research and so  
 4 3 forth, but other scientists may  
 5 4 disagree with you. And even if they  
 6 5 agreed with you, they would say we  
 7 6 will keep looking, we will keep  
 8 7 working on it because that's how the  
 9 8 game of science is played.  
 10 9 Q. But wouldn't just the  
 11 10 explanation that these organisms are  
 12 11 so complexly designed that there has  
 13 12 to be -- we don't know who it is, but  
 14 13 there has to be some designer of it,  
 15 14 how is that wrong for the  
 16 15 scientific --  
 17 16 A. Well, that's not how --  
 18 17 Q. -- for the scientific  
 19 18 literacy of students?  
 20 19 A. Because that's not how  
 21 20 science operates. You can't open up  
 22 21 the scientific journals or go to  
 23 22 scientific conferences and hear that  
 24 23 explanation.  
 25 24 And there's a more personal

PAGE 354

1 00354  
 2 1 explanations.  
 3 2 Q. Just that there is a  
 4 3 designer and that designer could be  
 5 4 God?  
 6 5 A. In science, if we don't  
 7 6 know the answer to something, we keep  
 8 7 looking for a naturalistic  
 9 8 explanation. It may take 20 years,  
 10 9 it may take hundreds of years.  
 11 10 Intelligent design posits, from what  
 12 11 I can read, that evolution has some  
 13 12 problems, ergo we claim  
 14 13 nonnaturalistic causation to solve  
 15 14 any form of problem, concern, things  
 16 15 we don't like about evolution.  
 17 16 Q. And what if intelligent  
 18 17 design was simply that these  
 19 18 biological organisms are so complex  
 20 19 they had to have been designed, it  
 21 20 could not have just resulted from  
 22 21 random mutation, et cetera?  
 23 22 A. I disagree with how you are  
 24 23 setting up the question. You are  
 25 24 deciding that they cannot be. I

PAGE 356

1 00356  
 2 1 side to all of this that's often  
 3 2 forgot. It's the student who says  
 4 3 "Yes, that is the case, there is this  
 5 4 gap in evolution, this one fossil, or  
 6 5 they have found man tracks and  
 7 6 dinosaur tracks side by side in the  
 8 7 Biloxi River in Texas," and then one  
 9 8 day they find out that that's not  
 10 9 really the case, that the scientists  
 11 10 have said, "Oh, we were wrong on  
 12 11 that, they really weren't."  
 13 12 And then all of a sudden  
 14 13 they attributed a certain amount of  
 15 14 their faith in the supreme being to  
 16 15 that particular piece of evidence,  
 17 16 and now that particular piece of  
 18 17 evidence has been taken away from  
 19 18 them.  
 20 19 Q. Did you always work under  
 21 20 the assumptions that the designer has  
 22 21 to be a supreme being?  
 23 22 A. Well, not many people,  
 24 23 necessarily, have such an emotional  
 25 24 tie to extraterrestrials.

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1 00357  
 2 1 Q. But the designer could be  
 3 2 really anything, so we don't know who  
 4 3 the designer was. Right?  
 5 4 A. Could be, but most students  
 6 5 I talked to when I talked to them  
 7 6 about intelligent design learned  
 8 7 about it at church or church-related  
 9 8 activities.  
 10 9 Q. Have you ever been  
 11 10 convicted of a crime?  
 12 11 A. No.  
 13 12 Q. Have you understood all of  
 14 13 my questions I have asked you today?  
 15 14 A. I hope so.  
 16 15 Q. Is there anything that you  
 17 16 remember now that you want to add to  
 18 17 what you stated previously during the  
 19 18 day?  
 20 19 A. There was something. Now I  
 21 20 think it was minor. I will say no.  
 22 21 I will retract my "There was  
 23 22 something."  
 24 23 Q. Is there anything else  
 25 24 about your opinion that you have to

PAGE 359

00359  
 1 WITNESS CERTIFICATION  
 2  
 3 I hereby certify that I  
 4 have read the foregoing transcript of  
 5 my deposition testimony, and that my  
 6 answers to the questions propounded,  
 7 with the attached corrections or  
 8 changes, if any, are true and  
 9 correct.  
 10  
 11  
 12 DATE BRIAN ALTERS, Ph.D.  
 13  
 14  
 15  
 16  
 17  
 18 PRINTED NAME  
 19  
 20  
 21  
 22  
 23  
 24

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00358  
 1 bring in this case on behalf of the  
 2 plaintiffs that you have not told me  
 3 about today?  
 4 MR. WALCZAK: What, that's  
 5 not in his report?  
 6 BY MR. WHITE:  
 7 Q. That's not in your report  
 8 or that you plan on testifying about.  
 9 A. No.  
 10 MR. WALCZAK: I have no  
 11 questions.  
 12 MR. WHITE: We're done.  
 13 MR. WALCZAK: We will not  
 14 waive signature.  
 15 (Thereupon, at 4:39 p.m.  
 16 the deposition concluded.)  
 17  
 18  
 19  
 20  
 21  
 22  
 23  
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